

Article

How Do ESG Ratings Impact the Valuation of the Largest Companies in Southern Europe?

Georgios Zairis ^{1,2,*} , Nikolaos Apostolopoulos ² and Panagiotis Liargovas ² ¹ Grant Thornton Luxembourg, L-1273 Luxembourg, Luxembourg² Department of Management Science and Technology, University of Peloponnese, 22100 Tripolis, Greece; anikos@uop.gr (N.A.); liargova@uop.gr (P.L.)

* Correspondence: george.zairis@lu.gt.com; Tel.: +352-661-887-878

Abstract

This paper examines the relationship between ESG ratings, as a subset of criteria and a tool for assessing sustainability, and firm performance in Southern European economies. It focuses on publicly listed large-cap companies in Portugal, Italy, Greece, and Spain. By analyzing a sample of 110 firms over a four-year period and applying Ohlson's valuation model, we evaluate how ESG scores influence these companies' performance. Our findings indicate that the social dimension is positive and statistically significant, suggesting that investors in Southern Europe increasingly prioritize value social responsibility initiatives as they aim to identify and manage ESG risks. In contrast, the Environmental and Governance components do not show statistical significance. The "polluting dummy" variable is positive and significant at the 1% level, indicating a valuation premium for high-emission firms, possibly reflecting investors' preference for financial stability in economically volatile environments. The baseline model yields an R^2 of approximately 10%, consistent with expectations given the multifactor nature of stock prices. The study contributes to the sustainability literature by highlighting the nuanced and region-specific role that ESG factors play in market valuation. We discuss limitations related to the regional scope, rating methodologies, and model specification, and offer suggestions for future research.

Academic Editors: Zhilin Yang,
Hui Lu and Gang Li

Received: 29 September 2025

Revised: 10 November 2025

Accepted: 11 November 2025

Published: 19 November 2025

Citation: Zairis, G.; Apostolopoulos, N.; Liargovas, P. How Do ESG Ratings Impact the Valuation of the Largest Companies in Southern Europe? *Sustainability* **2025**, *17*, 10347. <https://doi.org/10.3390/su172210347>

Copyright: © 2025 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Keywords: ESG ratings; scores; sustainability; performance; Southern economies

1. Introduction

The topic of ESG (Environmental, Social, Governance) scores has become increasingly relevant in the strategic decisions of companies, industries, markets, and countries. These scores are linked to best practice standards that determine whether a company operates in a sustainable, ethical, and responsible manner. However, perspectives on sustainability can vary significantly among industries based on their specific operations and business models [1]. Recent discussions have also emphasized how companies can succeed by more effectively addressing the diverse needs and demands of their stakeholders, especially in the aftermath of the 2008 global financial crisis. This shift has compelled businesses to adapt their strategies and perhaps think more innovatively in order to align with such expectations. A particularly impactful approach they are embracing involves engaging in non-financial activities, which serves to draw in a wider array of stakeholders and foster deeper connections with all parties involved. The importance of this issue has prompted both markets and countries to implement voluntary and mandatory regulations aimed

at standardizing these practices and enhancing transparency [2]. But the approach to sustainability remains a challenge for the core of the financial industry [3].

Companies that adopt sustainable practices can enjoy several benefits, including higher financial returns, risk mitigation, cost reductions, increased share value, enhanced reputation, and strengthened brand identity over the long term. Numerous empirical studies examine the impact of ESG scores both overall and regarding their components. However, even companies that practice sustainability are not completely shielded from potential risks. Events with environmental, social, financial, and governance implications can negatively affect a company's finances, value, and reputation. Additionally, questions have been raised regarding the effectiveness of ESG scores. As a result, new metrics have been developed to better capture the complex effects of ESG scores and firms' sustainable behavior and performance [1].

The purpose of this paper is to explore the relationship between ESG ratings and firm valuation in Southern Europe. Specifically, we expect ESG ratings to positively impact the valuation of large companies that were significantly affected during the recent economic crisis in Southern Europe, particularly in Portugal, Italy, Greece, and Spain. However, given the mixed findings in existing studies regarding the impact of ESG ratings, we were motivated to conduct an empirical investigation into this relationship. Our main hypothesis is that strong ESG metrics positively affect a company's stock price in the Southern European region.

We focus on these Southern European economies as they share a common currency and operate within a similar EU regulatory environment. Additionally, they have faced comparable macro-financial challenges in the past. Treating them as a unified group aligns with established research conventions that examine the Eurozone's core-periphery structure. These countries have demonstrated common dynamics and market treatment, such as patterns related to sovereign risk and financial adjustments. However, there are still significant cross-country variations in institutional quality and financial structures, which allow for nuanced analysis within a comparable policy framework.

The relationship between ESG performance and firm value can be understood through several established theoretical perspectives [4–6]. In addition, Stakeholder Theory [7] suggests that firms enhancing their environmental, social, and governance practices respond more effectively to the expectations of various stakeholders, investors, customers, employees, and regulators. By satisfying these key groups, firms can reduce conflicts, enhance their reputation, and ultimately improve their financial performance. Legitimacy Theory [8] argues that firms engage in ESG activities to align themselves with societal norms and expectations. By maintaining legitimacy, a firm can attract resources and sustain operations, which can lead to a higher market valuation. Signaling Theory [9] offers another perspective: ESG disclosures act as credible indicators of managerial competence and long-term strategic vision. Transparent and consistent ESG reporting helps reduce information asymmetry between managers and investors, positively impacting firm value.

Building on these perspectives, we hypothesize that firms with stronger ESG metrics will demonstrate higher stock market performance (Hypothesis 1). Additionally, since environmentally intensive ("polluting") firms face greater stakeholder scrutiny, we expect ESG practices to play an even more significant role in their valuation compared to non-polluting firms (Hypothesis 2). Considering these points, we specifically address the hypotheses being tested in this paper:

Hypothesis 1 (Main Hypothesis). *Strong ESG metrics will have a positive impact on the share prices of firms based in Portugal, Italy, Greece, and Spain. The relevant literature and ongoing efforts by companies to develop their ESG metrics indicate a positive correlation between ESG*

metrics and stock market performance in many regions worldwide. We believe that this relationship applies to the Southern European region as well, so we focus our analysis on Portugal, Italy, Greece, and Spain.

Hypothesis 2. *By classifying firms into polluting and non-polluting categories based on their industry, we expect ESG metrics to play a more significant role for polluting firms compared to non-polluting ones. Furthermore, we hypothesize that the polluting dummy variable we apply will strongly correlate with the stock market performance of firms in Southern Europe.*

The study contributes to the existing literature and the ongoing debate about the influence of ratings, focusing specifically on ESG factors and sustainability, particularly in Southern Europe, which is often underexplored in ESG valuation research. Most studies primarily concentrate on developing countries, which differ significantly from developed nations, especially those severely affected by the financial crisis. These countries were among the worst-performing economies during that period and have been viewed negatively (in such a grade that they were even characterized with a pejorative term), as they notably hindered the growth of the Eurozone. The remainder of this paper is organized as follows: Section 1 reviews related research on ESG ratings, disagreements regarding these ratings, the valuation of firms, and the correlation between ESG scores and firm value. Section 2 outlines our data and methodology, followed by Section 3, which presents the empirical results and discusses the limitations of the study. Finally, Section 4 concludes the paper.

2. Literature Review

2.1. ESG Ratings and Value

The ESG rating sector is gradually becoming very influential for both investors and issuers. According to a recent ESG report by Bloomberg [10] projections indicate that global ESG assets surpassed \$30 trillion in 2022 and are expected to exceed \$40 trillion by 2030. This would account for over 25% of the projected \$140 trillion in assets under management (AUM). As the sources and volume of ESG data continue to grow, the need for reliable information is becoming more critical. In response, regulators are drafting rules to enhance transparency in the field. The terms “ESG scores” and “ESG ratings” are often used interchangeably. However, the main distinction is that scores are typically numerical values (ranging from 1 to 10 or 1 to 100), while ratings are letter-based grades. Both aim to evaluate companies’ performance in relation to environmental, social, and governance factors. Companies usually receive an overall ESG rating (or score), along with more detailed ratings for different categories. These ratings are based on the premise that companies with higher scores are likely to improve their financial performance over time, as they face lower ESG risks and manage them more effectively [11].

ESG ratings are designed to measure “ESG quality,” but there is no universally agreed-upon definition of ESG quality. Instead, there are two main perspectives that can sometimes be seen as opposing each other. The first view sees ESG as a reflection of the positive impact a company has on its employees, suppliers, customers, the local community, and the environment. From this viewpoint, a company can enhance its ESG profile by reducing (or even eliminating) the activities that are harmful to stakeholders or by improving business practices to benefit these groups. Although such investments may impose costs in the short term, the long-term financial impacts on the company remain uncertain. This view of ESG (often referred to as “doing good”) is likely what most individual investors associate with ESG quality. In contrast, the second perspective sees ESG as a measure of how societal and environmental factors affect the company, with a focus on financial material impacts.

According to this definition, an ESG framework highlights risk factors that a company can prepare for through strategic planning, targeted investments, or operational changes. Even if addressing these ESG risks incurs costs in the short term, it is expected to provide long-term financial benefits to both the corporation and its shareholders. This view of ESG, which emphasizes the impact of environmental and social risks on financial performance, is the one mainly adopted by ESG ratings providers [12].

In 2021, the European Securities and Markets Authority—ESMA (responsible for the long-term stability of the European financial system) also highlighted the lack of a regulatory framework for ESG ratings and described the market as ‘underdeveloped’. At the same time, ESG rating providers were also in an early phase and limited to a few international institutions. Although there is still no official definition, in 2024, ESMA proposed the following, which was set to be adopted as part of the European ESG Ratings Regulation: ESG rating refers to “an opinion or a score, or a combination of both, regarding a rated item’s profile or characteristics with regard to environmental, social and human rights, or governance factors, or regarding a rated item’s exposure to risks or impact on environmental, social and human rights, or governance factors, that is based on both an established methodology and a defined ranking system of rating categories, irrespective of whether such ESG rating is labelled as ESG rating” [13] (p. 4). It was also clarified that ESG opinion “means an ESG assessment that is based on a rule-based methodology and defined ranking system of rating categories, involving directly a rating analyst in the rating process” [13] (p. 4). On the other hand, ESG score refers to “an ESG measure derived from data, using a rule-based methodology, and based only on a pre-established statistical or algorithmic system or model, without any additional substantial analytical input from a rating analyst”. In addition, the term ‘ESG rating provider’ refers to “a legal person whose activities include the issuance, and the publication or distribution, of ESG ratings on a professional basis” [13] (p. 4). With a focus of clarifying terms [14], suggested that ratings or scores, as well as other statistical assessments that measure different aspects can be classified into two main categories: (a) risk ratings, which are the most common form, assessing the firms’ exposure to ESG risks and their management (e.g., MSCI, Sustainalytics, S&P, and FTSE Russell), and (b) impact ratings, that assess the impact of firms and organizations on ESG factors (e.g., Refinitiv, Moody’s, Sensefolio and Inrate). They also proposed that a sustainable investment should be regarded as a whole ecosystem with a value chain (Sustainable Investment Value Chain). This chain consists of several interconnected key players that each have a distinct role: ESG rating providers, benchmark administrators or issuers, financial advisors, and investment managers [14].

Nowadays, leading ESG data providers like Refinitiv, Morgan Stanley Capital International (MSCI), Sustainalytics, and Bloomberg offer comprehensive datasets that investors and other stakeholders use to inform their decisions. These organizations assess various ESG criteria and use distinct, often proprietary methodologies to evaluate companies [15]. For the purposes of this paper, we use the Refinitiv database.

ESG rating from Refinitiv (which was recently rebranded as LSEG) has been designed to evaluate a company’s ESG performance across ten main themes, such as emissions, environmental product innovation, human rights, shareholders’ relations, and more. These scores are based on publicly reported data and provide a clear and data-driven evaluation of companies’ relative ESG performance and capacity. The scoring system integrates considerations of industry materiality and company size, capturing over 870 company-level ESG metrics. From these, a subset of 186 of the most comparable and relevant metrics for each industry supports the overall assessment and scoring process. The underlying measures are chosen based on factors such as comparability, impact, data availability, and industry relevance, which can differ across each industry group. These measures

are organized into ten categories that contribute to three pillar scores (Environmental, Social, and Governance), ultimately leading to the final ESG score. The Environmental and Governance pillars each consist of three category scores, while the Social pillar includes four. The weighting of these pillars and category scores differs by sector, a fact that Refinitiv clearly communicates. The final score reflects the company's ESG performance, commitment, and effectiveness. Refinitiv is one of the most frequently cited sources, appearing in over 2,500 academic papers. It stands out by granting its subscribers full access to all data points used in the calculation of its ESG scores. Many researchers use Refinitiv due to the quality of its information sources, its comprehensive data, and its usage in previous studies [16,17].

Despite the challenges, the importance of ESG ratings as a vital assessment tool should not be underestimated or overlooked. These evaluations have become essential tools for all key players in assessing and comparing the ESG performance of firms. At first, ESG scores were primarily developed for financial companies, but they quickly gained popularity across various sectors. These scores assist companies in improving their reputation, reducing financial risk and legislative pressure on their activities, and ultimately attracting more capital. Specifically, for investors, ESG scores serve to limit potential risks, such as finding themselves at the heart of an environmental or social scandal that could negatively affect their status and investments. They also allow for the anticipation of financial risks associated with negative impacts caused by malicious practices (e.g., corruption) or accidents (e.g., nuclear accidents, destruction of natural environments). However, they are less effective at analyzing the positive effects resulting from a company's adoption of ESG criteria, specifically in assessing how much a company contributes to the well-being of the society and environment in which it operates. Although measuring the impact of these activities on communities and the environment remains challenging, the truth is that ESG scores represent a positive step toward the greater incorporation of the UN Sustainable Development Goals in financial investments. They therefore remain the best available measure for evaluating a company's CSR activities by providing a quantitative assessment of the measures a company has implemented to protect its natural and social environment. In addition, their widespread acceptance makes them easier to use for comparisons between companies [18].

Extensive research shows that investors consider a firm's ESG performance when making investment decisions, especially for firms operating within the same sector or industry. Having relatively better ESG scores (or ratings) than competitors can be a competitive advantage that influences a firm's strategy in many ways and sometimes extends beyond financial considerations. Numerous studies also indicate that both institutional and retail investors expect companies to engage in ESG practices, and that institutional investors closely monitor the firms' ESG performance [19]. Although evidence shows the connection between ESG performance and making investment decisions, there is limited understanding of what influences ESG scores and how companies respond to score changes. One reason could be their complexity, since they aim to condense multiple, multidimensional goals into a single metric. As mentioned before, previous research has pointed out the lack of consensus among different ESG score providers. Additionally, most scores are relative, meaning they depend not just on a firm's own actions but also on the ESG performance of its industry peers. Another challenge is that ESG ratings often rely solely on publicly disclosed information, without any direct interaction with the firms being rated. Therefore, it is essential to differentiate between a firm's ESG disclosure and its ESG performance: ESG disclosure refers to the quantity and quality of information that firms share about their ESG practices, while ESG performance pertains to the actual impact of these practices [20].

Wu et al. [21] proposed that for small-scale companies, investors may perceive strong ESG performance as an indicator of risk mitigation, but for large-scale companies, robust ESG performance could be seen as a sign of value. Cheng et al. [22] evaluated the impact of ESG performance on firm value by examining enterprise multiples while controlling for various corporate attributes. Their findings indicated that disclosing ESG-related information significantly enhanced firm value, with this relationship becoming stronger after the pandemic of COVID-19. Notably, the influence of ESG scores on firm value appeared to be significant only in the post-pandemic period. Additionally, while the environmental score had a substantial impact on firm values, the scores in the social and governance categories did not show a significant effect. Nonetheless, researchers suggest that ESG uncertainty impacts both social outcomes and economic welfare [23–31].

2.2. ESG Disagreement and Challenges

Despite their growing significance and popularity, there have been ongoing concerns regarding inconsistencies, a lack of transparency, and potential risks of greenwashing practices that seem to persist [32]. Anselmi and Petrella [33] highlighted the differing opinions between European and American perspectives on ESG criteria and their connection to risk. According to the European point of view, ESG risks are considered potential financial hazards, especially those related to climate change, impacting both institutions and markets. The opposite side views ESG more as a moral behavior and therefore treats it as a voluntary act to disclose non-financial information by firms. As a result, official reporting is considered unnecessary. This observation provides a small but clear example of what is known as ESG disagreement but also clearly illustrates a danger that should not be overlooked.

Specifically, ESG disagreement refers to the issue of divergent ESG ratings from various rating agencies for the same company [34]. Researchers point out that the different rating methods used by institutions lead to inconsistent ratings. Disparities among rating agencies regarding rating methodologies, data sources, and indicator weights are considered the primary reasons for discrepancies in ESG ratings [35]. This creates greater information asymmetry between companies and investors, strongly reinforcing biases related to market perceptions of a firm's ESG performance. Consequently, investors cannot accurately evaluate a company's potential for sustainable growth [36]. The central issue lies in what these ratings truly measure. This can be extremely challenging, as determining what constitutes good or bad ESG practice is often subjective. Each ESG pillar encompasses many dimensions, and there is little consensus on what should be prioritized. In reality, they reflect more the declared policies of firms rather than what they do [37]. Christensen et al. [38] found that ESG scores are more influenced by disclosures than by genuine environmental or social performance since rating agencies often have significant disagreements on how to evaluate firms. This uncertainty undermines the reliability of the ratings and also erodes their credibility as a tool for promoting sustainable finance. It incurs costs for investors, firms, and regulators by distorting valuations and misallocating capital. It appears that when markets struggle to agree on what constitutes responsible and sustainable behavior, investment strategies become less effective. This also results in investors being misled, and stakeholders may find it more challenging to assess corporate performance [23].

2.3. Valuation of Firms and Financial Performance

A firm's value represents its overall worth, reflecting the market's assessment of both its tangible and intangible assets. Unlike a simple valuation based on profits or book assets, the concept of value captures the true market worth of a company by considering factors such as goodwill. It estimates the present value of the company's expected free

cash flow, discounted by its weighted average cost of capital. Value is closely linked to a firm's financial decisions, highlighting the importance of the time value of risk exposure, money, and the company's ability to sustain growth. A business with a high value typically enjoys a stronger competitive position and greater influence in the market. This can lead to an increased ability to attract customers and partners, which in turn opens up more business opportunities and expands market share. Additionally, a higher value indicates the company's economic strength and asset size, enabling it to secure more support and resources for financing and investment. Among the many factors affecting enterprise value are the corporate social responsibility fulfillment and the corporate capital allocation on enterprise value [39].

The relationship between ESG performance and corporate behavior is closely interconnected. Improving corporate behavior is directly linked to enhanced value creation efficiency. According to existing literature, value creation efficiency refers to a company's ability to maximize both economic and social value by optimizing resource allocation and increasing operational efficiency. Unlike traditional measures of corporate value, which tend to focus primarily on output or profit levels, value creation efficiency prioritizes how effectively resources are utilized. In contrast to the broader measure of total factor productivity (TFP), value creation efficiency provides insight into the rationality and sustainability of a company's internal resource allocation on a microeconomic level. Research indicates that enhancing value creation efficiency not only directly impacts a company's long-term competitiveness but also plays a crucial role in facilitating its green transformation [40]. Nonetheless, incorporating ESG considerations into business strategies can create real value by enhancing resilience, boosting competitiveness, and building stakeholder trust in a world fraught with risks and uncertainties [41,42]. Adherence to ESG principles has become a crucial competitive advantage across multiple sectors [43–46].

3. Materials and Methods

In this chapter, we will analyze the methodological approach used to test the hypotheses presented in the introduction. The main statistical method we will implement is multivariate regression analysis, incorporating Ohlson's [47] valuation model as described by Yoon et al. [48].

3.1. Regression Analysis and Ohlson's Valuation Model

As previously noted, regression analysis and Ohlson's valuation model can provide a very robust methodological foundation. By applying these frameworks, we can effectively evaluate the impact of the ESG factors on the Southern European economies for the period from 1 January 2018 to 31 December 2022. Several published papers have also employed a similar statistical framework. Notably, Wu et al. [21], Dechow et al. [49], Wang [50], Vasquez et al. [51] have used Ohlson's valuation model to assess and explore various economic phenomena. In this study, we utilize Ohlson's valuation model as our empirical framework due to its widespread application in connecting accounting fundamentals to a firm's market value. In addition to conventional accounting metrics, we enhance the model by including Environmental, Social, and Governance ratings. These ratings represent a form of non-financial information that influences investors' expectations regarding future earnings, risks, and costs of capital.

Prior research has shown that enhanced ESG disclosure is associated with lower cost of equity capital [52] and higher firm value [53], while ESG-strengths may also lead to reduced volatility and enhanced investor perceptions [54]. To ensure robustness of our findings, we perform diagnostic tests including heteroskedasticity [55], multicollinearity (VIF) and autocorrelation checks.

3.2. Southern European Economies—Data Analysis

To assess the impact of the ESG ratings and firm performance in Southern European economies, we selected our sample from large-cap companies from the relevant indices of the four Southern European countries as shown in Appendix A. We collected financial data through the Refinitiv Eikon software, focusing our research on the period from 1 January 2018 to 31 December 2022. The downloaded data were utilized to calculate ESG ratings, market performance, firm-specific financial performance, dividends per share ratio, and tax provision. In the dataset, all the major companies that are constituents of these four different indices were included. We concentrated on four different countries, namely Portugal, Italy, Greece, and Spain. More specifically, we used the constituents of four different indices namely the IBEX 35 (which consists of the 35 biggest companies in the Spanish Market), the PSI 20 (which consists of the 20 biggest companies in the Portuguese market), the Athex 20 (consisting of the 20 biggest companies in the Greek market), and the IT 40 (which consists of the 40 biggest companies in the Italian market).

Due to the factors mentioned above, our final sample comprised the ESG ratings of 101 firms between 2018 and 2022 (amounting to approximately 505 firm-year observations). To measure financial performance, we used the Earnings per Share ratio and the Dividends per Share ratio of each firm in line with Barth and Clinch [56]. In addition, we strive to offer a fresh perspective in this research by including the tax provisions made by the aforementioned companies to the states. This approach will also enable us to examine a potential correlation between taxation and ESG factors. We utilized ESG scores published by the Refinitiv database, which evaluate a firm's environmental, social, and corporate governance practices. The three different ESG factors will be used separately on our sample (i.e., different scores for the "E" component, the "S" and finally different scores for the "G" component).

Our sample construction procedure can be described as follows. Firstly, we included every cooperation that existed in the aforementioned four different indices. We then identified the business sectors that were related to energy, material, textiles, retail, and utility sectors as environmentally sensitive industries. To have properly formatted data, we dropped all the missing values from our sample. In addition, we winsorized some of our variables as it was found in the news that some companies had outliers because they were facing some exceptional situations. We applied winsorization at the 1st and 99th percentiles (i.e., at 1% and 99%) for all continuous variables, including Earnings Per Share, Tax Provision (scaled), Dividend Per Share, ESG Ratings, and Share Price. Additionally, we scaled the Tax Provision variable because the reported figures were expressed in millions, while the other variables were on a significantly smaller numerical scale. This adjustment was made to enhance the interpretability of the model and to prevent potential distortions that could arise from large numerical discrepancies among the variables.

3.3. Stock Price (Dependent Variable)

In line with the valuation framework proposed by Ohlson [47] and further developed by Barth and Clinch [56], the stock price of each firm is used as the dependent variable in this study. More specifically, we used the closing stock price at the end of the fiscal year under consideration. This approach reflects the market's assessment of the firm's value at a given point in time and captures the cumulative effect of publicly available financial and non-financial information. Stock price is widely accepted in empirical accounting and finance literature as a proxy for firm value, as it integrates expectations about future performance, risk, and growth prospects. Furthermore, using stock price as the dependent variable allows for the examination of how various explanatory variables, such as accounting

metrics or ESG scores, are reflected in market valuation, consistent with the principles of value relevance research.

3.4. Control Variables

The control variables utilized in this study are drawn from relevant literature and have been used in similar research papers that aimed to measure the impact of a test variable on ESG ratings across various industries, following Ohlson's model. In the baseline regressions, the control variables included market performance, which is measured by Earnings per Share (EPS), Dividend per Share, and tax provision ratios. Stock prices are positively correlated with EPS, as higher earnings signal stronger profitability and future growth [57]. Investors use EPS as a key indicator of value in equity valuation [58]. Dividends Per Share reflects a firm's ability to return value to shareholders, influencing stock prices through investor preference for stable dividends [59]. Firms with consistent or growing DPS often attract long-term investors [60]. Higher tax provisions reduce net income, potentially lowering stock prices due to diminished after-tax profitability [61]. Investors also interpret changes in tax expense as signals of shifting operational or geographic strategy [62].

3.5. Test Variables Measures

To assess the test variables, we incorporated four different indicators into our base model. The first indicator was the total ESG ratings for each company. The second was the environmental score for each firm, the third was the governance score for each firm, and the final indicator was the corporate governance score for each company.

4. Results

Table 1 provides summary statistics of the main variables that are used in this paper. On average, a firm in the final sample will have an average of 75 out of 100 of ESG Environment rating, 79 out of 100 of ESG Social Rating and 68 out of 100 of ESG Governance Rating. The Tax Provision has a mean value of 1168.32 million. Finally, the earnings per share ratio has a mean value of 0.71.

Table 1. Descriptive Statistics.

Variable	Count	Mean	Std. Dev	Min	25th Percentile	Median	75th Percentile	Max	R-Squared vs. Share Price
Earnings Per Share	505	0.71	2.71	−32.30	0.14	0.53	1.18	13.49	0.078
Tax Provision Scaled	505	1168.32	2706.23	−5946.00	111.65	369.22	947.00	22,066.00	0.003
Dividend Per Share	505	0.64	3.23	0.00	0.00	0.21	0.46	55.00	0.001
ESG Environment	505	69.46	20.10	0.00	57.00	75.00	84.00	99.00	0.002
ESG Social	505	76.56	15.21	24.00	68.00	79.00	89.00	98.00	0.002
ESG Governance	505	65.24	18.47	20.00	55.00	68.00	78.00	96.00	0.002
Polluting Dummy	505	0.62	0.48	0	0	1	1	1	0.026
Share Price	505	17.40	28.19	0.01	3.78	9.07	18.71	194.43	1

The descriptive statistics provide insight into the distribution and scale of each variable. For example, the mean of Earnings Per Share is relatively low, reflecting the diversity of firm sizes. The Tax Provision and ESG scores show moderate dispersion, while Share Price exhibits high variance across firms, suggesting market-based heterogeneity.

We compute the squared correlation (R^2) between each independent variable and Share Price as a preliminary proxy of explanatory strength. Earnings Per Share and Polluting exhibit the highest R^2 values, supporting their importance in the model. ESG Governance shows very low R^2 , consistent with its lack of significance in regression analysis.

The correlation matrix (Table 2) reveals moderate positive correlations between ESG dimensions (especially ESG Social and Environment), indicating some degree of collinearity. However, no pair exceeds the 0.8 threshold, suggesting multicollinearity is not crit-

ical. The negative correlation between Tax Provision and Share Price confirms earlier regression signs.

Table 2. Correlation Matrix.

Variable	Earnings per Share	Dividend per Share	Tax Provision Scaled	ESG Environment	ESG Social	ESG Governance	Polluting	Share Price
Earnings Per Share	1.00	0.04	0.23	0.02	0.07	−0.03	0.10	0.28
Dividend Per Share	0.04	1.00	−0.03	−0.04	−0.13	−0.05	0.09	0.03
Tax Provision Scaled	0.23	−0.03	1.00	0.29	0.33	0.25	−0.07	−0.05
ESG Environment	0.02	−0.04	0.29	1.00	0.67	0.33	−0.06	−0.05
ESG Social	0.07	−0.13	0.33	0.67	1.00	0.43	0.02	0.05
ESG Governance	−0.03	−0.05	0.25	0.33	0.43	1.00	−0.20	−0.04
Polluting	0.10	0.09	−0.07	−0.06	0.02	−0.20	1.00	0.16
Share Price	0.28	0.03	−0.05	−0.05	0.05	−0.04	0.16	1.00

Before proceeding with the implementation of the regressions, we conducted a *t*-test methodology to ensure the significance and relevance of the variables included in our model. This analysis serves as a robustness check that helps us to verify whether the selected variables are statistically significant and appropriate for examining the two hypotheses of this paper. The *t*-test results confirm the statistical significance of these metrics for explaining variations in share price (Table 3).

Table 3. T-test results.

Variable	t-Statistic	Significance	p-Value
Earnings Per Share	5.923	***	5.83×10^{-9}
Tax Provision Scaled	9.701	***	1.62×10^{-20}
Dividend Per Share	4.448	***	1.07×10^{-5}
ESG Environment	77.672	***	1.28×10^{-282}
ESG Social	113.073	***	0.000
ESG Governance	98.450	***	<0.001

*** → significant at the 1% level ($p < 0.01$).

To verify the validity of the OLS assumptions, we conducted a Breusch–Pagan test for heteroskedasticity on Table 3. This test allowed us to determine whether the variance of the residuals is constant across observations, ensuring the robustness of our model's inference (Table 4). The test yields a Chi-square statistic of 7.30 with an associated *p*-value of 0.294, which exceeds the conventional 5% significance level. Consequently, we fail to reject the null hypothesis of homoskedasticity. This result implies that there is no evidence of heteroskedasticity in the main model.

Table 4. Breusch–Pagan Test for Heteroskedasticity.

Dependent Variable	Breusch–Pagan χ^2	Prob > χ^2	Heteroskedasticity
Share Price	7.300	0.294	Not detected

The Durbin–Watson [63] statistic, introduced in 1971, is used to test for the presence of first-order autocorrelation in the residuals of a regression model. The statistics range from 0 to 4, where a value close to 2 suggests no autocorrelation, values below 2 indicate positive autocorrelation, and values above 2 indicate negative autocorrelation. Unfortunately, in our model, the Durbin–Watson statistic is 0.555, which is significantly below 2. This result strongly indicates the presence of positive autocorrelation in the residuals, violating one of the key OLS assumptions. To address the issue of autocorrelation, we applied Heteroskedasticity and Autocorrelation Consistent (HAC) standard errors, also known

as Newey–West, 1986 [64] standard errors. This adjustment allows us to obtain a valid inference despite the violation of the OLS assumptions.

The main OLS regression analysis (Table 5) reveals that financial metrics have an impact on firm valuation. To begin with, Tax Provision demonstrates the strongest impact on share price (Coefficient: 0.285, $p < 0.05$). The same applies to Earnings Per Share, while Dividends Per Share are not statistically significant.

Table 5. Regression analysis outcomes for the main model.

Variable	Coefficient	Standard Error	z-Statistic	p-Value	Significance
Intercept	7.293	8.679	0.840	0.401	-
Earnings Per Share	3.111	1.721	1.808	0.071	*
Tax Provision Scaled	−0.001	0.001	−2.730	0.006	***
Dividend Per Share	0.284	0.436	0.653	0.514	
ESG Environment	−0.148	0.097	−1.533	0.125	
ESG Governance	−0.0357	0.069	−0.517	0.606	
ESG Social	0.284	0.121	2.342	0.019	**

Number of Observations: 505

R-Squared: 0.104

Adjusted R-Squared: 0.094

Newey–West standard errors applied

Table 5 reports OLS regression results for the model $\text{Share Price} = a + b \text{ Earnings Per Share} + b_1 \text{ Tax Provision Scaled} + b_2 \text{ Dividends Per Share} + b_3 \text{ ESG Environment} + b_4 \text{ ESG Governance} + b_5 \text{ ESG Social} + \text{error}$ for the whole sample of the project. The dependent variable is Share Price in columns from (1) to (7). Coefficient estimators and t-statistic are shown, and their standard errors are clustered by firm. *** (**) (*) significance at the 1% (5%) (10%) two-tailed level.

The Environmental and Governance dimensions are statistically insignificant, with coefficients of −0.15 and −0.03, respectively. This implies that environmental performance and corporate governance, as measured in this model, do not have a discernible impact on firm valuation. However, the social dimension is positively and significantly associated with share price (coefficient = 0.28, $p = 0.019$), highlighting that firms with stronger social performance—such as employee relations, community engagement, or labor standards—are more favorably perceived by the market.

The adjusted R-squared of the model is 0.094, indicating that approximately 9.4% of the variation in share prices is explained by the included variables. While modest, this explanatory power is reasonable given the complexity and volatility of market pricing dynamics.

The analysis suggests that the social factor of ESG does have an influence on the stock market valuation of the largest companies listed on stock exchanges in the countries we examined. However, it is clear that investors prioritize other factors over ESG considerations. Therefore, we conclude that while the main hypothesis—that ESG metrics positively influence the valuation of companies listed in Southern European stock markets—holds some truth, their impact is relatively less significant compared to other traditional variables used in corporate valuation.

In Table 6, we present the results of the second regression model, which adds a dummy variable that categorizes firms as either polluting or non-polluting. Being alarmed by the statistically insignificant results of the first model and the low significance of ESG factors in the baseline model, we observed that the second model also exhibited limited statistical significance. To address this, we performed additional tests to examine the potential multicollinearity among the three ESG factors. The Variance Inflation Factor (VIF) test and Ridge and Lasso regressions revealed that the Governance ESG factor does not play a significant role in shaping share prices and should be excluded from the model. This

conclusion is supported by the Ridge regression (ESG Governance coefficient = -0.02) and Lasso regression (ESG Governance coefficient = 0.00). The results of the VIF assessment are presented in Appendix B.

Table 6. Regression analysis outcomes with the Polluting Dummy Variable.

Variable	Coefficient	OLS <i>p</i> -Value	Significance	Ridge Coefficient	Lasso Coefficient
Intercept	3.397	0.692	-	-	-
Earnings Per Share	3.000	0.079	*	8.091	8.005
Tax Provision Scaled	-0.001	0.008	***	-3.475	-3.344
Dividend Per Share	0.187	0.662	-	0.600	0.479
ESG Environmental	-0.131	0.159	-	-2.623	-2.355
ESG Social	0.239	0.050	**	3.609	3.277
ESG Governance	-0.001	0.992	-	-0.616	0.000
Polluting dummy	6.650	0.009	***	3.219	3.179

Number of Observations: 505. R-Squared: 0.117. Newey–West standard errors applied. Table 6 reports OLS regression results for the model $\text{Share Price} = a + b \text{ Earnings Per Share} + b_1 \text{ Tax Provision Scaled} + b_2 \text{ Dividends Per Share} + b_3 \text{ ESG Environment} + b_4 \text{ ESG Governance} + b_5 \text{ ESG Social} + b_6 \text{ Polluting} + \text{error}$ for the whole sample of the project. The dependent variable is Share Price. *** (**) (*) significance at the 1% (5%) (10%) two-tailed level. To address multicollinearity, identified through high Variance Inflation Factors only on ESG Variables ($\text{VIF} > 24$ for ESG variables), we applied Ridge and Lasso regressions. To address the issue of autocorrelation, we apply Heteroskedasticity and Auto-correlation Consistent (HAC) standard errors, also known as Newey–West [60] standard errors. This adjustment allows us to obtain a valid inference despite the violation of the OLS assumptions.

In addition to the OLS estimation, we employed Ridge and Lasso regressions as regularized linear models to assess the robustness of our coefficients under multicollinearity. These techniques introduce penalty terms that shrink coefficient estimates, thereby reducing the variance of the estimates when predictors are highly correlated. While OLS provides unbiased estimates under the Gauss–Markov assumptions, it is sensitive to multicollinearity. Ridge addresses this by applying an L2 penalty, while Lasso adds an L1 penalty, which can also perform variable selection. The results of the regularized regressions serve as stability checks. Notably, variables that retained significance across OLS, Ridge, and Lasso estimations strengthen confidence in their explanatory relevance. On the other hand, variables that were down-weighted or zeroed out in the Lasso model may exhibit less predictive power in the presence of multicollinearity.

The key conclusion from both models is the significance of the “Social ESG” factor, which maintains its statistical significance in both models. A surprising outcome is shown in the results for the “Polluting” dummy variable in our model. As observed, this variable is statistically significant at the 1% level in influencing share prices.

On the other hand, the most unexpected finding is the positive relationship between the polluting status of firms and share prices. We believe this result can be explained by the fact that the largest and most profitable companies listed on the stock exchanges of Portugal, Italy, Greece, and Spain are involved in sectors such as energy, retail, and textiles. Investors tend to favor these companies due to the stability of their stock performance and the continuous profits they generate in volatile markets. In Southern European countries, investors appear to focus on the financial stability that these firms have over dangers that might arise regarding their environmental impact. It is worth noting, however, that these companies have made huge efforts to reduce their environmental impact and improve their ESG scores. This shows a change towards environmental responsibility, even among traditionally polluting industries. It also partially supports our second hypothesis—that “polluting” firms place greater emphasis on their ESG performance relative to their stock market valuation. What was unexpected, however, was the observed positive relationship between firm valuation and the polluting dummy variable.

Therefore, while our second hypothesis is valid, the relationship between these two variables appears to be positive rather than negative, contrary to our initial expectations. Following the extraction of our results, we identified several relevant studies that support our line of reasoning, such as those by Guo et al. [65] and Ali et al. [66].

Although the adjusted R^2 of our models remains modest (ranging between 0.09 and 0.12 on both hypotheses), this level of explanatory power is typical in empirical studies examining firm-level determinants of stock prices, particularly those involving ESG metrics. Given that share valuation is influenced by a wide array of macroeconomic, behavioral, and firm-specific factors beyond the model's scope, the observed R^2 values should be interpreted as reasonable within the context of corporate finance research. Our primary objective was to identify significant relationships between ESG dimensions and firm valuation, rather than to maximize predictive accuracy. The results provide meaningful insights consistent with prior evidence in the literature.

5. Conclusions, Limitations and Future Research

The findings of this study illustrate the complex and multifaceted relationship between ESG scores, financial performance metrics, stock market valuation and sustainability in the context of the Southern European economies, particularly in Portugal, Italy, Greece, and Spain. The results reaffirm that Earnings Per Share (EPS) remains an important determinant of firm value, as traditionally emphasized in the financial valuation literature. However, the emergence of a positive association between the social pillar of ESG and stock prices indicates a notable trend: investors in the region are beginning to integrate social responsibility into their decision-making processes, albeit gradually. This finding is consistent with numerous other papers that exist on the relevant literature [67–69].

This growing relevance of social factors suggests an evolving investment landscape, where non-financial disclosures and ethical considerations are increasingly factored into market valuations. Nevertheless, the study also reveals a paradox—firms with poor environmental performance, often classified as polluters, are still positively valued by the market. Although this paradox initially appeared surprising, we observed that it is not unique to our sample. Similar patterns have been documented in previous studies that identify a so-called pollution premium, where firms with higher environmental impact are still positively valued by the market. While this specific phenomenon has not yet been extensively analyzed within the ESG metrics framework, related empirical evidence—particularly from the S&P 500 and other large international samples—supports the idea that investors may reward financially stable but environmentally intensive firms. Such results have been reported by Hsu, Li and Tsou [70], Sankar and Nag [71] and in Jaccard et al. [72]. These findings suggest that markets may, at least in the short term, prioritize financial resilience and profitability over environmental performance—a trend that appears consistent with our results for Southern European firms.

Moreover, the ECB Working Paper No. 3030 (Green and Brown Returns in a Production Economy) finds that brown firms in Europe often display a return premium, particularly during periods of economic uncertainty. In the context of Southern European economies, these results may reflect investors' preference for financial stability, employment preservation, and short-term profitability in markets still characterized by moderate volatility, high debt levels, and slower ESG integration. Thus, the observed “pollution premium” in our study may be less a contradiction of ESG principles than an indication of transitional market behavior—where sustainability considerations are emerging but have yet to outweigh traditional financial drivers in valuation processes.

Furthermore, the macroeconomic context of the study period (2018–2022) reinforces this interpretation. The COVID-19 pandemic and the war in Ukraine generated extraordi-

nary volatility in key economic indicators such as GDP growth, inflation, and interest rates, producing an environment of heightened uncertainty. In such circumstances, investors plausibly redirected their portfolios toward firms perceived as more financially robust and less exposed to macroeconomic shocks—many of which belong to polluting or traditional industries. For this reason, including macroeconomic control variables in our regression model could have distorted the true behavioral and valuation dynamics observed during this exceptional period. Instead, our approach focuses on firm-level determinants, providing a clearer representation of how ESG factors, particularly the Social pillar, interact with investor sentiment and valuation within the distinct economic setting of Southern Europe.

This phenomenon may reflect a unique economic reality in the Southern European region, where markets appear to favor economic stability, employment preservation, and short-term returns over long-term environmental sustainability. The economic structure of these countries—often characterized by high public debt, elevated unemployment, and lower levels of industrial diversification—might partially explain this investor preference for predictability and resilience.

The coexistence of these trends suggests a transitional phase in Southern European capital markets, where traditional financial indicators continue to dominate, but ESG considerations—particularly social factors—are gaining traction. This has important implications for both firms and policymakers aiming to promote sustainable development and attract responsible investment capital. Given the complexity of these findings, future research could explore several promising directions. One avenue would be to examine sector-specific effects, as ESG relevance may vary substantially across industries such as energy, finance, manufacturing, and technology. Another important research extension would be a cross-country comparison involving other economically or politically volatile markets, such as those in Eastern Europe, Latin America, or parts of Southeast Asia. Such an approach could help determine whether the valuation patterns observed in Southern Europe are context-specific or indicative of broader global trends in the interplay between ESG performance, taxation, and capital market outcomes.

This study focuses on important insights into the relationship between ESG ratings and firm valuation in the context of Southern European economies. However, several limitations must be acknowledged. First, the analysis relies exclusively on publicly available ESG scores from the Refinitiv database. While this source is widely used and robust, ESG ratings remain subject to methodological inconsistencies and inter-provider disagreement. As such, our findings may be influenced by the inherent biases or blind spots within the scoring model employed. Second, although the study includes five years and includes 505 firm-year observations from large-cap companies across Portugal, Italy, Greece, and Spain, the focus on a single region and specific indices limits the generalizability of the results. Southern European economies possess unique structural characteristics and market conditions that may not apply to other regions, particularly those with more developed capital markets or stronger regulatory frameworks. Third, our regression framework does not account for all possible firm-level and macroeconomic variables that may influence share prices. The model also assumes a linear relationship between ESG scores and market valuation, potentially overlooking nonlinear or sector-specific dynamics. Moreover, multicollinearity among ESG components, though partially addressed via Ridge and Lasso regressions, still suggests caution in interpreting the individual contribution of each ESG pillar.

Future research could address these limitations by expanding the scope of the study geographically and methodologically. A cross-regional comparison with Northern or Eastern European countries would help test the robustness of our findings and assess whether the observed patterns are unique to the PIGS economies. Furthermore, a dummy variable representing the COVID-19 period can be introduced to investigate potential

changes in firms' ESG performance and overall assessments during the pandemic. This allows for the identification of whether the crisis had a significant impact on corporate sustainability practices and evaluations. Incorporating ESG data from multiple providers could also help control rating divergence and enhance credibility. Furthermore, a more granular sectoral analysis or a panel data approach with firm fixed effects could provide deeper insight into the heterogeneous impact of ESG factors. Lastly, future studies may benefit from exploring nonlinear modeling techniques, such as quantile regressions or machine learning-based estimators, to better capture complex ESG valuation dynamics across different market environments. Lastly, other future studies could extend this analysis by incorporating firm fixed effects or industry dummies to better control for unobserved heterogeneity across firms and sectors. Such an approach would allow for a more precise estimation of ESG impacts by isolating firm-specific and industry-related characteristics that may influence valuation outcomes.

Author Contributions: Conceptualization, N.A.; Data curation, G.Z., N.A. and P.L.; Formal analysis, G.Z. and P.L.; Methodology, G.Z. and N.A.; Project administration, N.A.; Resources, P.L.; Software, P.L.; Supervision, N.A. and P.L.; Validation, G.Z. and N.A.; Writing—original draft, G.Z. and P.L.; Writing—review & editing, G.Z. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data presented in this study are openly available in Refinitiv Database. (<https://www.lseg.com/en/data-analytics>, accessed on 23 May 2025).

Conflicts of Interest: Author Georgios Zairis was employed by the Grant Thornton Luxembourg. The remaining authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Appendix A. Firms Used per Country

In this table all the firms that are used in my sample are demonstrated. In addition, the aforementioned firms are split by country

Portugal—PSI 20	Italy—IT 40	Greece—ATHEX 20	Spain—IBEX 35
Altri	A2A S.A	Aegean Airlines	ACCIONA SA
Banco Portuguls	Amplifon S.A	Alpha Bank	ACERINOX
Corticeria Amorim	Assicurazioni General S.A	Athens Water Supply	ACS SA
Correios de Portugal	Azimut Holdings S.A	Cenergy Holdings	AENA SA
Energias de Portugal	Banca Mediolanium	Ellaktor S.A	AMADEUS GROUP
EDP Renoviveis	Banca Popolare Sondrio	Eurobank S.A	Arcelor Mittral
GALP Energia	Banco BPM S.A	GEK Terna	BBVA
Jeronimo Martins	BCA MPS	Sarantis S.A	Banco Sadabell
Mota- Engil S.A	Bper Banca	Helleniq Energy S.A	Banco Santander
NOS SGPS	Campari	Jumbo S.A	BankInter S.A
REN SGPS	ENEL SA	Lamda S.A	Caixa Bank S.A
SEMAPA SGPS	Eni SpA	National Bank of Greece S.A	Cellnex Telecom
Sonae SGPS	ERG	O.T.E S.A	Acciona Energas
Navigator Company S.A	Ferrari	Piraeus Bank S.A	Enagis S.A
	Fineco	Piraeus Port Authority S.A	Endesa S.A
	Hera SpA	PPC S.A.	Ferrovial S.A
	Interpump	Lamda Development S.A.	Grifols S.A
	Intesa Sanpaolo		
	Iveco NV	Titan Cement S.A.	Iberdrola S.A
	Inwit	Viohalco S.A	Disevo Textil S.A
	Italgas	Coca-Cola HBC AG	Immobiliaria Colonial S.A
	Leonardo SpA	Mytilineos Holdings	Logista Integral S.A
	MedioBanca		Meli Hotels International S.A
	Moncler SpA		Merlin Properties
	Nexi		Naturgy Energy Group
	Pirelli		Redeia Corporation S.A
	Poste Italiane		Telefonica S.A
	Prysmian SpA		Unicaja Banco S.A
	Recordati		Red Electrica Group
	Saipem		
	Snam		
	Stellantis		
	ST Microelectronics		
	Telecom Italia		
	Tenaris		
	Terna		
	UniCredit		
	Unipol Gruppo		

Appendix B. VIF Analysis and Interpretation

To assess potential multicollinearity among the explanatory variables included in the regression model, we compute Variance Inflation Factors (VIFs) for each regressor, including the ESG sub-scores and the Polluting industry dummy.

VIF quantifies how much the variance of a regression coefficient is inflated due to linear dependence with other predictors. The general interpretation thresholds are:

- VIF < 5 → No serious multicollinearity
- VIF between 5 and 10 → Moderate multicollinearity
- VIF > 10 → Severe multicollinearity concern

The VIF values obtained (see Appendix B Table) show that all variables fall well below the threshold of 5, indicating that multicollinearity is not a critical issue in our model.

Specifically:

- The ESG Social and ESG Environment sub-scores exhibit mild correlation (as seen in the correlation matrix), but not to the extent that compromises coefficient stability.
- ESG Governance shows a very low VIF, consistent with its limited explanatory power in the model.
- The Polluting dummy displays a low VIF as expected for a categorical binary variable.

The table in Appendix B presents the results of the Variance Inflation Factor (VIF) analysis for all variables used in the regressions of this paper. Variables with a VIF greater than 10 indicate a high degree of multicollinearity, values between 5 and 10 suggest moderate multicollinearity, while variables with a VIF lower than 5 show no significant multicollinearity.

Variable	VIF Values
Earnings Per Share	1.08
Dividend Per Share	1.04
Tax Provision Scaled	1.22
ESG Environment	1.87
ESG Social	2.14
ESG Governance	1.33
Polluting	1.08

References

1. Juca, M.N.; Muren, P.D.; Valentincic, A.; Ichev, R. The Impact of ESG Controversies on the Financial Performance of Firms: An Analysis of Industry and Country Clusters. *Borsa Istanbul. Rev.* **2024**, *24*, 1305–1315. [\[CrossRef\]](#)
2. Al Amosh, H.; Khatib, S.F.A.; Ananzeh, H. Environmental, Social and Governance Impact on Financial Performance: Evidence from the Levant Countries. *Corp. Gov.* **2023**, *23*, 493–513. [\[CrossRef\]](#)
3. Zairis, G.; Liargovas, P.; Apostolopoulos, N. Sustainable Finance and ESG Importance: A Systematic Literature Review and Research Agenda. *Sustainability* **2024**, *16*, 2878. [\[CrossRef\]](#)
4. Andrade, J. The PIGS, Does the Group Exist? An Empirical Macroeconomic Analysis Based on the Okun Law. *GEMF Working Papers*. 2009. Available online: <https://ideas.repec.org/p/gmf/wpaper/2009-11.html> (accessed on 26 October 2025).
5. Kusters, A.; Garrido, E. Mining PIGS. A Structural Topic Model Analysis of Southern Europe Based on the German Newspaper Die Zeit (1946–2009). *J. Contemp. Eur. Stud.* **2020**, *28*, 477–493. [\[CrossRef\]](#)
6. Campos, N.F.; Macchiarelli, C. The Dynamics of Core and Periphery in the European Monetary Union: A New Approach. *J. Int. Money Financ.* **2021**, *112*, 102325. [\[CrossRef\]](#)
7. Freeman, R.E.E.; McVea, J. A Stakeholder Approach to Strategic Management. *SSRN Electron. J.* **2001**. [\[CrossRef\]](#)
8. Suchman, M.C. Managing Legitimacy: Strategic and Institutional Approaches. *Acad. Manage. Rev.* **1995**, *20*, 571. [\[CrossRef\]](#)
9. Spence, M. Job Market Signaling. *Q. J. Econ.* **1973**, *87*, 355. [\[CrossRef\]](#)
10. Bloomberg.com. Global ESG Assets Predicted to hit \$40 Trillion by 2030, Despite Challenging Environment, Forecasts Bloomberg Intelligence. 2024. Available online: <https://www.bloomberg.com/company/press/global-esg-assets-predicted-to-hit-40-trillion-by-2030-despite-challenging-environment-forecasts-bloomberg-intelligence/> (accessed on 21 May 2025).
11. CFAInstitute.org. The Role and Rise of ESG Ratings. 2024. Available online: <https://www.cfainstitute.org/insights/articles/the-role-and-rise-of-esg-ratings> (accessed on 21 September 2025).
12. Larcker, D.; Pomorski, L.; Tayan, B.; Watts, E. ESG Ratings: A Compass Without Direction. Rock Center for Corporate Governance at Stanford University Working Paper Forthcoming. 2022. Available online: <https://ssrn.com/abstract=4179647> (accessed on 23 May 2025).
13. EU Regulation. 2024/3005 of the European Parliament and of the Council (of 27 November 2024) on the Transparency and integrity of Environmental, Social and Governance (ESG) Rating Activities, and Amending Regulations (EU) 2019/2088 and (EU) 2023/2859. *Official Journal of the European Union*. 2024. Available online: <http://data.europa.eu/eli/reg/2024/3005/oj> (accessed on 23 May 2025).

14. ESMA. Sustainable Investments: Facilitating the Investor Journey: A Holistic Vision for the Long Term. 2024. Available online: https://www.esma.europa.eu/sites/default/files/2024-07/ESMA36-1079078717-2587_Opinion_on_the_functioning_of_the_Sustainable_Finance_Framework.pdf (accessed on 23 May 2025).
15. D'Ecclesia, R.L.; Levantesi, S.; Stefanelli, K. Measuring Business Impacts on the Sustainability of European-Listed Firms. *Socio-Econ. Plan. Sci.* **2024**, *96*, 102078. [CrossRef]
16. LSEG. LSEG Data & Analytics. Refinitiv Has Now Changed to LSEG. 2024. Available online: <https://www.lseg.com/en/data-analytics/refinitiv> (accessed on 23 September 2025).
17. Benuzzi, M.; Bax, K.; Paterlini, S.; Taufer, E. Chasing ESG Performance: How Methodologies Shape Outcomes. *Int. Rev. Fin. Anal.* **2025**, *104*, 104239. [CrossRef]
18. Clement, A.; Robinot, E.; Trespeuch, L. The Use of ESG Scores in Academic Literature: A Systematic Literature Review. *J. Enterp. Communities People Places Glob. Econ.* **2025**, *19*, 92–110. [CrossRef]
19. Kräussl, R.; Oladiran, T.; Stefanova, D. A Review on ESG Investing: Investors' Expectations, Beliefs and Perceptions. *J. Econ. Surv.* **2024**, *38*, 476–502. [CrossRef]
20. Kiesel, F.; Schnitzler, J. Do Firms Care about ESG Ratings? Evidence from Refinitiv's Scoring Adjustment. Available online: <https://doi.org/10.2139/ssrn.4912669> (accessed on 23 September 2025).
21. Wu, Y.; Zhou, R.; Zhang, C. Size and ESG Premiums: Evidence from Chinese A-Share Market. *N. Am. J. Econ. Financ.* **2024**, *74*, 102246. [CrossRef]
22. Cheng, R.; Kim, H.; Ryu, D. ESG Performance and Firm Value in the Chinese Market. *Investig. Anal. J.* **2024**, *53*, 1–15. [CrossRef]
23. Avramov, D.; Cheng, S.; Lioui, A.; Tarelli, A. Sustainable Investing with ESG Rating Uncertainty. *J. Financ. Econ.* **2022**, *145*, 642–664. [CrossRef]
24. Baker, M.P.; Egan, M.; Sarkar, S. How Do Investors Value ESG? *SSRN Electron. J.* **2022**. Available online: https://www.nber.org/system/files/working_papers/w30708/revisions/w30708.rev0.pdf (accessed on 23 September 2025). [CrossRef]
25. Aslan, A.; Poppe, L.; Posch, P. Are Sustainable Companies More Likely to Default? Evidence from the Dynamics between Credit and ESG Ratings. *Sustainability* **2021**, *13*, 8568. [CrossRef]
26. Kim, S.; Li, Z.F. Understanding the Impact of ESG Practices in Corporate Finance. *Sustainability* **2021**, *13*, 3746. [CrossRef]
27. Dinca, M.S.; Vezeteu, C.-D.; Dinca, D. The Relationship between ESG and Firm Value. Case Study of the Automotive Industry. *Front. Environ. Sci.* **2022**, *10*, 1059906. [CrossRef]
28. Friede, G.; Busch, T.; Bassen, A. ESG and Financial Performance: Aggregated Evidence from More than 2000 Empirical Studies. *J. Sustain. Financ. Investig.* **2015**, *5*, 210–233. [CrossRef]
29. Hart, S.L.; Ahuja, G. Does It Pay to Be Green? An Empirical Examination of the Relationship between Emission Reduction and Firm Performance. *Bus. Strat. Environ.* **1996**, *5*, 30–37. [CrossRef]
30. Jang, G.-Y.; Kang, H.-G.; Lee, J.-Y.; Bae, K. ESG Scores and the Credit Market. *Sustainability* **2020**, *12*, 3456. [CrossRef]
31. Pham, T.N.; Tran, P.P.; Le, M.-H.; Vo, H.N.; Pham, C.D.; Nguyen, H.-D. The Effects of ESG Combined Score on Business Performance of Enterprises in the Transportation Industry. *Sustainability* **2022**, *14*, 8354. [CrossRef]
32. Wilmerhale.com. 2024. Available online: <https://www.wilmerhale.com/en/insights/client-alerts/20241210-eu-adopts-esg-ratings-regulation-strengthening-transparency-and-reliability-in-sustainable-finance> (accessed on 23 September 2025).
33. Anselmi, G.; Petrella, G. ESG Ratings: Disagreement across Providers and Effects on Stock Returns. *J. Int. Financ. Mark. Inst. Money* **2025**, *100*, 102133. [CrossRef]
34. Chatterji, A.K.; Levine, D.I.; Toffel, M.W. How Well Do Social Ratings Actually Measure Corporate Social Responsibility? *J. Econ. Manag. Strategy* **2009**, *18*, 125–169. [CrossRef]
35. Berg, F.; Kolbel, J.F.; Rigobon, R. Aggregate Confusion: The Divergence of ESG Ratings. *Rev. Financ.* **2022**, *26*, 1315–1344. [CrossRef]
36. Ren, H. ESG Rating Disagreement and Corporate Digital Transformation. *Fin. Res. Lett.* **2025**, *75*, 106903. [CrossRef]
37. Bayat, A.; Qu, R.; Rahmani, Z. ESG Rating Uncertainty: Causes, Consequences and Potential Remedies. *SSRN Electron. J.* **2025**. [CrossRef]
38. Christensen, D.M.; Serafeim, G.; Sikochi, A. Why Is Corporate Virtue in the Eye of the Beholder? The Case of ESG Ratings. *Account. Rev.* **2022**, *97*, 147–175. [CrossRef]
39. Cai, C.; Li, Y.; Tu, Y. Big Data Capabilities, ESG Performance and Corporate Value. *Int. Rev. Econ. Financ.* **2024**, *96*, 103540. [CrossRef]
40. Qiang, Q.; Li, S.; Meng, L.; Lei, Y. ESG Performance and Corporate Value Creation Efficiency: Evidence from China. *Fin. Res. Lett.* **2025**, *81*, 107397. [CrossRef]
41. Zairis, G.; Apostolopoulos, N.; Zairis, A. Value Creation through ESG Practices. In *Advances in Human Resources Management and Organizational Development*; IGI Global: Hershey, PA, USA, 2024; pp. 133–148, ISBN 9798369329917.
42. Polbennikov, S.; Desclee, A.; Dynkin, L.; Maitra, A. ESG Ratings and Performance of Corporate Bonds. *J. Fixed Income* **2016**, *26*, 21–41. [CrossRef]

43. Dou, J.; Mirza, N.; Umar, M.; Horobet, A. ESG Uncertainties and Valuation Implications: Evidence from the EU Banking Sector. *Res. Int. Bus. Fin.* **2025**, *76*, 102872. [\[CrossRef\]](#)
44. Mandas, M.; Lahmar, O.; Piras, L.; De Lisa, R. ESG Reputational Risk and Market Valuation: Evidence from the European Banking Industry. *Res. Int. Bus. Fin.* **2024**, *69*, 102286. [\[CrossRef\]](#)
45. Rahat, B.; Nguyen, P. The Impact of ESG Profile on Firm's Valuation in Emerging Markets. *Int. Rev. Fin. Anal.* **2024**, *95*, 103361. [\[CrossRef\]](#)
46. Wang, M.; Liu, L.; Liang, T. Does the ESG Disclosure Quality Affect Financial Performance: Empirical Evidence from Chinese Energy-Listed Companies. *Fin. Res. Lett.* **2025**, *77*, 107118. [\[CrossRef\]](#)
47. Ohlson, J.A. Earnings, Book Values, and Dividends in Equity Valuation: An Empirical Perspective. *Contemp. Acc. Res.* **2001**, *18*, 107–120. [\[CrossRef\]](#)
48. Yoon, B.; Lee, J.H.; Byun, R. Does ESG Performance Enhance Firm Value? Evidence from Korea. *Sustainability* **2018**, *10*, 3635. [\[CrossRef\]](#)
49. Dechow, P.M.; Hutton, A.P.; Sloan, R.G. An Empirical Assessment of the Residual Income Valuation Model. *J. Account. Econ.* **1999**, *26*, 1–34. [\[CrossRef\]](#)
50. Wang, P. A Modified Ohlson (1995) Model and Its Applications. *Eur. Account. Rev.* **2023**, *32*, 663–691. [\[CrossRef\]](#)
51. Vazquez, R.; Lorenzo-Valdes, A.; Valencia-Herrera, H. Value Relevance of the Ohlson Model with Mexican Data. *Contaduría Adm.* **2007**, 33–52. Available online: https://www.scielo.org.mx/scielo.php?pid=S0186-10422007000300003&script=sci_abstract&tlng=en (accessed on 23 September 2025).
52. Dhaliwal, D.S.; Li, O.Z.; Tsang, A.; Yang, Y.G. Voluntary Nonfinancial Disclosure and the Cost of Equity Capital: The Initiation of Corporate Social Responsibility Reporting. *SSRN Electron. J.* **2010**. [\[CrossRef\]](#)
53. Fatemi, A.; Glaum, M.; Kaiser, S. ESG Performance and Firm Value: The Moderating Role of Disclosure. *Glob. Fin. J.* **2018**, *38*, 45–64. [\[CrossRef\]](#)
54. Khan, S.N. Impact of Financial Literacy, Financial Knowledge, Moderating Role of Risk Perception on Investment Decision. *SSRN Electron. J.* **2016**. [\[CrossRef\]](#)
55. Breusch, T.S.; Pagan, A.R. A Simple Test for Heteroscedasticity and Random Coefficient Variation. *Econometrica* **1979**, *47*, 1287. [\[CrossRef\]](#)
56. Barth, M.E.; Clinch, G. Scale Effects in Capital Markets-Based Accounting Research. *J. Bus. Financ. Account.* **2009**, *36*, 253–288. [\[CrossRef\]](#)
57. Penman, S. *Financial Statement Analysis and Security Valuation*, 6th ed.; McGraw-Hill Professional: New York, NY, USA, 2020; ISBN 9780078025846.
58. Damodaran, A. *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset*; Wiley: Hoboken, NJ, USA, 2012.
59. Lintner, J. Distribution of Incomes of Corporations Among Dividends, Retained Earnings, and Taxes. *Amer. Econ. Rev.* **1956**, *46*, 97–113.
60. Brealey, R.A.; Myers, S.C. *Principles of Corporate Finance*, 7th ed.; McGraw Hill Higher Education: Maidenhead, UK, 2002; ISBN 9780072467666.
61. Scholes, M.S.; Wolfson, M.A.; Erickson, M.M.; Maydew, E.L.; Shevlin, T.J. *Taxes and Business Strategy: A Planning Approach*, 3rd ed.; Pearson: Upper Saddle River, NJ, USA, 2004; ISBN 9780131465534.
62. Graham, J.R.; Raedy, J.S.; Shackelford, D.A. Research in Accounting for Income Taxes. *J. Account. Econ.* **2012**, *53*, 412–434. [\[CrossRef\]](#)
63. Durbin, J.; Watson, G.S. Testing for Serial Correlation in Least Squares Regression. *Biometrika* **1971**, *58*, 1. [\[CrossRef\]](#)
64. Newey, W.K.; West, K.D. A Simple, Positive Semi-Definite, Heteroskedasticity and Autocorrelation Consistent Covariance Matrix (April 1986). NBER Working Paper No. t0055. 2020. Available online: <https://ssrn.com/abstract=225071> (accessed on 26 October 2025).
65. Guo, Y.; Zheng, G.; Chen, Y. Impact of ESG Performance on Firm Value: Evidence from Global Companies. *Sustainability* **2022**, *14*, 14507.
66. Ali, W.; Naseem, M.A.; Ahmed, M. Do ESG scores enhance firm market performance? Evidence from high-polluting industries. *Sci. Rep.* **2024**, *14*, 338.
67. Aydogmuş, M.; Gulay, G.; Ergun, K. Impact of ESG Performance on Firm Value and Profitability. *Borsa Istanbul Rev.* **2022**, *22*, S119–S127. [\[CrossRef\]](#)
68. Bancel, F.; Glavas, D.; Karolyi, G.A. Do ESG Factors Influence Firm Valuations? Evidence from the Field. *Financ. Rev.* **2025**, *60*, 1191–1223. [\[CrossRef\]](#)
69. Goncalves, T.C.; Barros, V.; Avelar, J.V. Environmental, Social and Governance Scores in Europe: What Drives Financial Performance for Larger Firms? *Econ. Bus. Lett.* **2023**, *12*, 121–131. [\[CrossRef\]](#)
70. Hsu, P.-H.; Li, K.; Tsou, C.-Y. The Pollution Premium. *J. Financ.* **2023**, *78*, 1343–1392. [\[CrossRef\]](#)

71. Sankar, N.G.; Nag, S.; Chakrabarty, S.P.; Basu, S. The Carbon Premium: Correlation or Causation? Evidence from S&P 500 Companies. *Energy Econ.* **2024**, *134*, 107635.
72. Jaccard, I.; Kockerols, T.; Schüler, Y. *Green and Brown Returns in a Production Economy*; ECB Working Paper Series; The European Central Bank: Frankfurt am Main, Germany, 2023.

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.