

MASTER THESIS U.S.E



Utrecht University

The Impact of ESG Scores on Stock Market Performance: The Case of Greek Companies

Author: Franc Lilas

Supervisor: Ronald Huisman

Student number: 7291191

2nd Supervisor: Bilge Karatas

Email address: f.lilas@students.uu.nl

Utrecht University | School of Economics, Utrecht, The Netherlands

A Thesis submitted to the Board of Examiners in partial fulfilment of the requirements of the degree of Master of Science in Sustainable Finance and Investment.

Submitted on June 28th, 2024

Acknowledgement

I would like to express my deepest gratitude to all those who provided me the possibility to complete the Thesis.

First and foremost, I would like to thank my supervisor, Dr. Ronald Huisman, whose guidance and support were instrumental in the successful completion of this thesis.

A Special thanks to my fellow students and friends, particularly to Monica Ankala, Dewi Nabilah Anwar, and Marios Andreakis for their moral support, and for providing a sounding board for ideas and discussions. The shared experiences and challenges have made this journey both enjoyable and rewarding.

Last but not least, I extend my heartfelt gratitude to my family for their unwavering support and encouragement. My mother, Elvira Lila, and my brother Voullnet Lilas have always been a pillar of strength and their belief in my abilities has been a constant source of motivation.

Contents

1. Introduction	5
2. Literature review and Theoretical framework	13
2.1 The relationship between ESG and performance	13
2.2 The relationship between environmental pillar and performance	15
2.3 Relationship between social pillar and performance	16
2.4. The relationship between governance pillar and performance	16
3. Methodology and empirical strategy	17
3.1 Research questions	17
3.2 Data collection and description	18
3.3 Data analysis and econometric model specification	20
4. Results and Interpretation	23
4.1 Descriptive Statistics	23
4.2 Correlation analysis	26
4.3. Regression analysis	27
4.3.1. Model 1	27
4.3.1. Model 2	27
4.3.1. Model 3	29
4.4 Summary of findings	30
5. Discussion	31
6. Conclusion	34
References	37
Appendix	39

Abstract

The global spotlight on Environmental, Social, and Governance (ESG) criteria in investment decisions has intensified, given the perceived impacts on corporate performance and investor choices. Nonetheless, Greek companies' stock market performances have rarely been investigated based on ESG scores. This void is filled by this research which investigates the relationship between ESG scores and firms' stock market returns to 2023 for firms listed in the Athens Stock Exchange (ASE) over the period 2017-2023. To achieve this objective, a quantitative methodology is employed. Using ESG scores from Refinitiv's DataStream, monthly returns from these stocks and other companies' sizes (market capitalization), as well as their industry classification according to GICS; a sample of 29 Greek firms was considered for analysis. Our findings reveal that monthly return is not significantly influenced by ESG scores, company size and industry classifications as indicated by regression results where R-square value is very small. Moreover, while weak correlations have been noticed, there are meaningful differences in average returns between high and low ESG scorers according to a t-test. Unexpectedly, Model 3 of regression analysis shows negative relationship between ESG scores and monthly return for those companies with extremely high ESG score (>75 to 100), thereby challenging belief about immediate financial gains from strong adoption of such practices. This finding contradicts meta-analytic results that generally found positive relationships between long-term corporate financial outcomes and ESG performance.

Keywords: *ESG scores, stock returns, regression analysis, Greek firms, Refinitiv*

1. Introduction

ESG practice, and in a wider context the measurement of sustainability, has proved to be a key factor in investment decisions, as there is an increasing demand for the inclusion of this information in company disclosures, in correspondence with financial information, so that comparison between them is possible. Beyond the interest of the investment public, the companies themselves have realized that concern for environmental, social and governance issues and actions on them are more than just responsibility. Thus, it is given the opportunity through these companies to strengthen confidence both in their internal and external environment but also to build a more sustainable future.

Even though the concept of ESG is now quite familiar to the investment and non-public, in an environment strongly influenced by the socio-economic effects of current circumstances and with environmental issues emerging on the surface of discussions, the issues of sustainability are becoming more urgent and relevant than ever before. The concept of ESG is closely linked to the so-called Socially Responsible Investing (SRI), which first appeared in the 1960s as a result of the Industrial Revolution and the drastic changes it brought to the fore (Martini, 2021). But one of the notable events that ultimately led to the creation of the ESG, in its present sense, is attributed to the initiative of the United Nations (United Nations – UN) and the mobilization of 20 financial institutions to sign the Universal Compact in 2000. The Global Compact was a call to align their strategy and operations and to take action towards its 10 Principles, which included safeguarding human rights, labor and environmental issues and reducing corruption. A little later, in 2004, through the Global Compact, it was created the report “Who Cares Wins– Connecting Financial Markets to a Changing World”, which highlighted the acronym ESG and offered guidance to on how to integrate it into their business models (Sundaram, 2023). Today, the Global Compact is signed by more than 20,500 companies from 160 countries and 94 in

Greece. In September 2015, all 193 Member States of the United Nations adopted a plan, the 2030 Agenda (Agenda “2030”), to a better future, drawing a path for the next 15 years. At the heart of Agenda 2030 are the 17 Sustainable Development Goals – SDGs (Sustainable Development Goals – SDGs) which clearly this plan. Meeting these ambitions will require an effort from all sectors of society and will also make a significant contribution to the process.

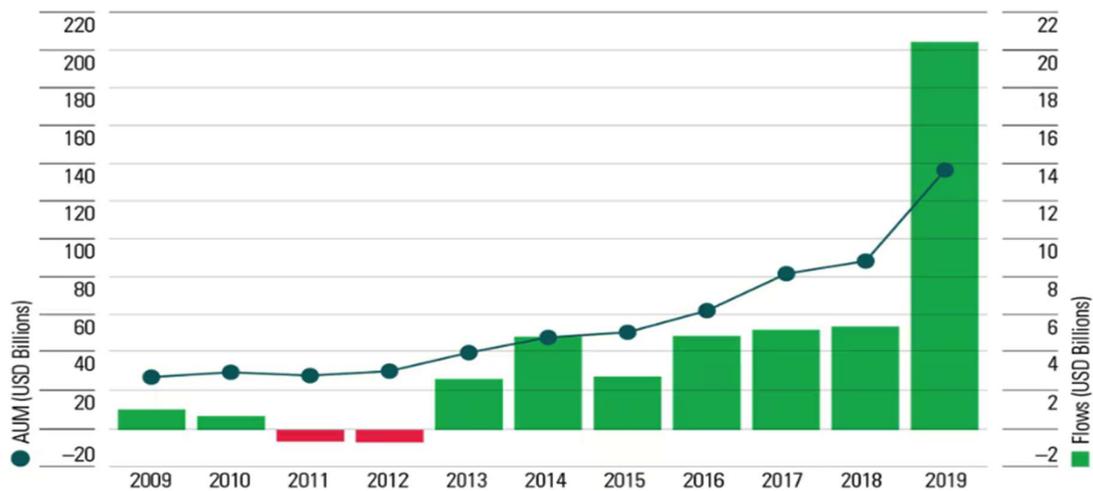


Image 1: The Sustainable Development Goals - Agenda 2030. [Source](#).

In the early 1990s, while fewer than 20 companies released ESG data, the corresponding number of sustainability report releases had increased to almost 9,000 by 2016 (Amel-Zadeh & Serafeim, 2018). The need for ESG reporting has become so significant that CEOs are now calling for regulation. Research from Fortune reveals that most CEOs want the SEC in the USA to impose ESG reporting requirements, likely mirroring the GRI and SASB standards. Major progress was made towards global ESG reporting standards at the COP26 climate conference in November 2021 with the establishment of the International Sustainability Standards Board (ISSB), aiming to merge various ESG disclosure standards and promote their global adoption. Further details on these standards are expected following a public consultation in 2022 (Moving worlds, 2023).

The transition to sustainable investment is so strong because it is driven by demand and interest from investors, who are directing an ever-increasing percentage of their portfolios towards sustainable strategies as they try to use their funds to help create a more sustainable world

(Taylor & Collins, 2018). Investor interest in ESG data has grown rapidly, as highlighted by Graph 1. In the U.S. alone in 2019, 300 ESG commitment funds received a total of \$20.6 billion in net flows, which is four times the total amount of 2018 (Hale, 2020). In 2020, the increase exceeded 50 billion while in 2021 it closed with an increase in the number of funds by 70 billion dollars compared to 2020, reaching a total of 357 billion dollars. Moreover, more than \$600 billion worldwide have been infiltrated into funds that focus on ESG criteria in 2021, contributing to a 55% increase in managed assets following ESG policy. For example, global ESG mutual fund assets increased to \$2.74 trillion in December 2021, from \$1.65 Trillion at the end of 2020 (and \$1.28 Trillion at end of 2019). This significant surge in investment and asset growth underscores why 2021 has been called the year of ESG investing (Kerber & Jessop, 2021). According to the Morgan Stanley Institute for Sustainable Investing (2024), the interest in ESG investing remains vivid in 2024, with more than half of individual investors planning to increase their allocations to sustainable investments in the next year and over 70% believing that strong ESG practices can lead to higher returns.



Graph 1: Sustainable Funds estimated annual flows. Source: Hale, 2020

The financial model of ESG investments is now the usual approach worldwide and is reflected in ESG ratings, codes, guidelines and regulatory rules. It is focused on the role of capital and investors in promoting change in sustainability practices and is based less in the decision-making role of the Governing Council and management duties of directors. The horizon of today's investors has begun to diversify in terms of understanding the value of companies and their long-term viability. The inclusion of ESG data provides investors with a way to perceive critical issues of the company that are not traditionally included in its Financial Statements and that have a decisive influence on its risks and opportunities. Therefore, environmental, social and administrative criteria (ESGs) are a set of standards relating to a company's behavior and are used by socially conscious investors to control their potential investments. ESG investors seek to ensure that the companies they finance are responsible environmental managers, good corporate citizens and are guided by accountable managers (Escrig-Olmedo et al., 2010).

ESG indicators are divided into three main pillars, each of which includes a question under consideration.

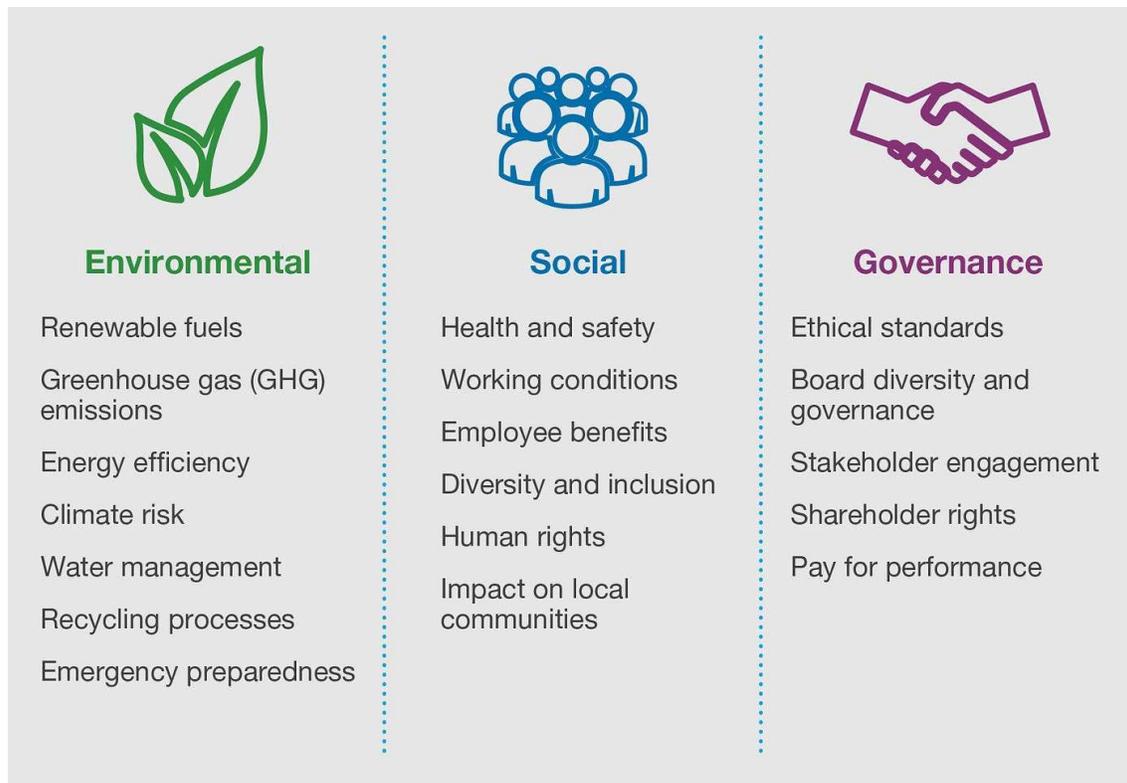


Image 2: ESG Pillars. [Source](#)

➤ The Environmental Pillar

The focus on environmental sustainability receives significant attention, with many companies prioritizing efforts to reduce their carbon footprints, packaging waste, and water usage, among other environmental impacts. These practices not only benefit the planet but also often lead to positive financial outcomes. For instance, reducing packaging materials can cut costs and enhance fuel efficiency. An example of such initiatives is MYTILINEOS which demonstrated strong environmental performance in 2021, reducing absolute CO2 emissions by nearly 12.4%, decreasing NOx/SOx emissions by 2%, and limiting particulate emissions by 48.3% compared to 2020. The company also increased investments in renewable energy to 9.7% of total production, recycled 25% of solid waste, and achieved a rehabilitation rate of 84% for land

used in mining operations, without impacting biodiversity or water availability, while maintaining full compliance with environmental regulations (Mytilineos, 2021).

However, assessing a business's environmental impact can be challenging due to the complexity of externalities. Even when externalities are accounted for, there can be disagreements about their costs and impacts. Consequently, certain externalities may not be reflected in consumer prices. Benchmarking practices aim to quantify these externalities, facilitating the tracking and reporting of progress in reducing them in a meaningful manner.

➤ The Social Pillar

The social pillar of sustainability emphasizes the importance of obtaining and maintaining social approval and support from employees, stakeholders, and the community. This involves treating employees fairly, engaging with the community through various initiatives such as fundraising and sponsorship, and ensuring ethical practices throughout the supply chain to address concerns like child labor and fair wages. For example, MYTILINEOS increased its total employment share by 25% and invested in professional training programs covering 54% of its workforce. Additionally, more than 40% of employees are covered by business collective bargaining agreements, highlighting the company's commitment to fair labor practices (Mytilineos, 2021).

➤ The Governance Pillar

Governance evaluates the effectiveness of a company's structures and procedures in ensuring that its board members and executives prioritize the interests of shareholders and plan for long-term activities. It encompasses the company's ability to manage its rights and obligations through best management practices, thereby creating incentives for responsible decision-making. This involves aspects such as the composition and diversity of the Board of Directors,

the independence of executives, executive compensation, accounting standards, and measures to prevent corruption. In essence, governance examines the framework within which the company operates to ensure transparency, accountability, and ethical conduct. For example, in terms of corporate conduct, MYTILINEOS implemented a tailored training program on its Code of Business Conduct, maintained a "Zero Tolerance" stance against corruption and bribery across its operations, and did not face financial penalties for violations. The company also remained compliant with relevant legislation, with no incidents of non-compliance in environmental, social, or economic aspects, while actively engaging stakeholders through thematic consultations. Additionally, in corporate governance, MYTILINEOS voluntarily adhered to the UK Corporate Governance Code, established a Sustainability Committee within the Board of Directors to oversee sustainable development issues, integrated ESG Key Performance Indicators (KPIs) into board members' variable compensation, and increased female representation on the Board to 27.3% (Mytilineos, 2021).

Simply put, the concept of ESG is a measure of the company's exposure to long-term environmental, social and governance risk, which is often not given the corresponding weight in traditional financial analysis. This risk, however, includes such axes as energy efficiency, workers' safety and the diversity of the Governing Council, which can have very significant financial implications. A strong ESG rating indicates that the company manages ESG risks properly while a low rating reveals that it has a higher unmanaged exposure to ESG risk than its counterparts. ESG assessment and rating, if combined with financial analysis, can provide investors with a better understanding of the organization's long-term perspective.

With the market being overwhelmed by the increasing introduction of ESG information, it is necessary for investors to have at their disposal the necessary tools so that they can also look at the performance of companies from a sustainability perspective. In contrast to the financial elements, for which they have been specifically established IFRS (International Financial

Reporting Standards), there is still no official directive on non-financial information to be disclosed and therefore each company chooses the indicators based on its own business model.

With regard to Greek listed companies, the contribution of the Athens Stock Exchange (AHB) with the provision of the ESG Information Disclosure Guide (2022), which aims both to simplify this information and to provide support to companies and the investment public, is important. Based on the CAA Guide, the indicators are divided into general, affecting the entire economy, and sectoral, with particular emphasis on the second category. Taking into account the above, the structure of the sectoral indicators is indicatively as follows:

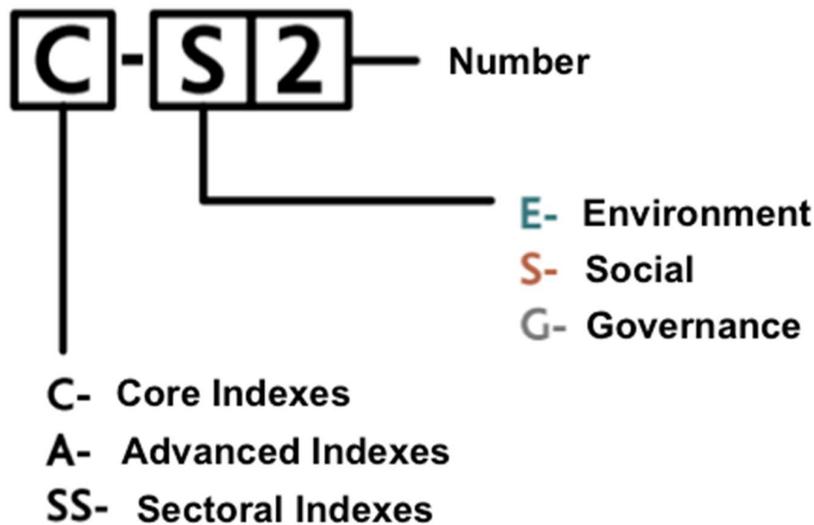


Image 3: Structure of ID indexes. Source: ATHEX Athens Stock Exchange (2022). Information Publishing ESG.

However, in the absence of a compulsory common line of calculation and disclosure information, the job of investors becomes even more difficult as such information is not comparable between companies. In addition, investors, aiming at the protection and

development of their capital, seek strong and analytical information in real time. This role of creating an audience benchmark has been undertaken by the rating agencies, with the most well-known in place to be Bloomberg, MSCI, Morningstar (formerly known as Sustainalytics), Refinitiv (formerly known as Thomson Reuters Financial & Risk), S&P Global, Fitch Ratings and Moody's Investors Service.

2. Literature review and Theoretical framework

With the ongoing progress of the global sustainable development concept, the disclosure of corporate environmental information has gained increasing importance. Consequently, the relationship between ESG performance and stock returns of listed companies has garnered academic attention. This chapter outlines the empirical literature regarding the relationship between sustainability and financial performance.

2.1 The relationship between ESG and performance

Prior to the explicit introduction of ESG-related concepts, scholars explored the relationship between Corporate Social Responsibility (CSR) investments and corporate value. There are two main types of studies on CSR and financial performance. Event studies analyze short-term impacts (abnormal returns) of CSR actions, yielding mixed results: Wright and Ferris (1997) found a negative relationship, Posnikoff (1997) a positive one, and Teoh et al. no relationship during South Africa's divestiture. Other studies similarly vary in findings. Longitudinal studies link Corporate Social Performance (CSP) to profitability. In more details, Aupperle and Pham (1985), found no link, McGuire et al. (1988) noted CSP's association with prior but not subsequent performance, and Waddock and Graves (1997) found significant positive relationships with profitability measures like ROA in the following year. Li (2006) concluded

that while CSR might lower short-term enterprise value, it does not impact long-term value. Wang and He (2009) found no significant relationship between CSR and financial performance metrics like ROE in Chinese manufacturing firms. Mittal et al. (2008), explore the link between CSR and financial performance in India, noting increased CSR activity among firms. Using statistical analysis over four years, their study finds little evidence that companies with a code of ethics significantly outperform those without in terms of economic and market added value. Kim M. and Kim Y. (2014) discovered that strengthening CSR increases shareholder value by boosting Tobin Q, while weakening CSR raises systemic risk. Bardos et al. (2020) found that CSR positively affects product market perception, especially for standardized products in competitive industries, impacting product quality attributes and creating corporate value through market perception. Researchers have reported mixed impacts of CSR on financial performance, potentially due to flawed empirical analyses. identifies a common misspecification in econometric studies that fail to control R&D investment, which skews results. When correcting this, the study finds that CSR has a neutral impact on financial performance.

After the formal introduction of the ESG concept by the United Nations Environment Program (UNEP) in 2005, scholarly research on related fields officially began. Halbritter and Dorfleitner (2015) found no significant correlation between ESG ratings and portfolio returns. Similarly, Landi and Sciarelli (2019) noted that the Italian capital market does not price shares based on positive ESG performance due to investors' disregard for corporate ethical standards. Takahashi and Yamada (2021) proposed that during the COVID-19 pandemic, Japan's ESG performance was not effectively reflected in stock returns. Torre et al., (2020) investigate how ESG impacts stock returns and conclude that ESG commitments do not significantly influence the performance of Eurostoxx50 companies. In contrast to these neutral results, many studies suggest that ESG positively impacts stock returns. Khan (2019) showed that portfolios with the

highest ESG scores outperformed others by 17% in stock returns. Gavrilakis and Floros (2023) examine the impact of financial performance indicators and ESG scores on stock returns for large-cap firms across six European countries from 2010 to 2020 and finds that in Greece and France, larger firms tend to experience lower stock returns. Investors in most European countries, except Italy, do not see diminished returns from investing in highly ESG-scoring firms. Conversely, Italian firms show a significant negative correlation between ESG performance and stock returns. Additionally, the study observes no overall evidence of ESG-induced herding behavior, except during the Covid-19 pandemic in Portugal, Italy, and Greece. To sum up, the evidence in the empirical literature is mixed but Friede et al. (2015) provides comprehensive evidence that generally ESG criteria has a positive or non-negative impact on corporate financial performance across different studies. This consistency of outcomes across distinct asset classes, areas and time frames indicates that there is a lasting logic and benefits of integrating investment strategies with ESG.

2.2 The relationship between environmental pillar and performance

The environmental pillar examines whether firms' sustainability is based on their impacts on the environment in direct or indirect terms (Trahan et al., 2023). Many economic studies have shown that this one has a good connection with corporate financial performances. Examining "eco-efficiency" as an expression of economic value versus waste production, Derwall et al. (2004) assessed if socially responsible investing (SRI) could beat traditional portfolios. From 1995 through 2003, eco-efficient portfolios outperformed less efficient ones in terms of financial returns. In contrast, Manrique and Marti-Ballester (2017) investigated whether environmental performance affects financial performance during global financial crisis by analyzing data from 2982 firms over the period 2008-2015. Their study using Petersen's approach showed that ecological practices had significant effect on profitability for both

developed and developing countries. Significantly enough, emerging markets experienced greater long-term gains than their counterparts that were industrialized.

2.3 Relationship between social pillar and performance

The social pillar rates business sustainability according to how effectively companies handle their internal and external social relationships and interactions themselves. A notable study in this regard is Edmans (2011) which explores the impact of high employee satisfaction on long-term stock returns. Edmans constructs a value-weighted portfolio comprising stocks from the '100 Best Companies to Work for in America' and assesses its performance against the four-factor model from 1984 to 2009. The study finds that the socially sustainable portfolio consistently outperforms, achieving an annual four-factor alpha of 3.5%. This finding holds robustly across various company-specific characteristics, weighting methodologies, and outlier exclusions. This research underscores two key insights: firstly, socially responsible investing (SRI) screens may enhance investment returns, and secondly, in alignment with human capital theories, employee satisfaction correlates positively with corporate value.

2.4. The relationship between governance pillar and performance

The governance pillar pertains to how a company is managed by its top executives, reflecting the alignment between management's interests and stakeholders' interests (Rezaee, 2017). Gompers et al. (2003) developed a Governance Index based on shareholder rights across 1500 firms in the 1990s, finding that firms with stronger shareholder rights achieved higher profitability and firm value. Velte (2017) focused on the ESG performance of companies listed on the German Prime Standard (DAX30, TecDAX, MDAX) from 2010 to 2014, using correlation and regression analyses to assess the impact of ESG on financial performance, particularly return on assets (ROA). The study revealed that governance had the most

significant positive impact on financial performance compared to environmental and social factors.

3. Methodology and empirical strategy

This chapter outlines the research questions addressed in this study and the methodology employed to explore them. The next sections provide in detail the data sample utilized for the analysis and the specific procedures adopted for conducting the study.

3.1 Research questions

The global attention to the inclusion of environmental, social and governance (ESG) criteria in investment decisions has grown substantially because of the increasing recognition of the influence of sustainability on corporate performance and investor preferences. Nonetheless, there is scanty empirical research on how exactly ESG scores affect Greek firms' stock market performance. This study seeks to bridge this gap by looking into the relationship between ESG scores and stock market performance by companies listed at Athens Stock Exchange (ASE). Hence, the main goal of this research is to shed light on these issues:

Research Questions:

- What is ESG role in determining Greek companies' stock market returns?
- Are there any deviations in terms of Greece's stocks performance concerning the high and low scorers?

3.2 Data collection and description

To initiate off, a sample of representative Greek companies listed at the Athens Stock Exchange (ATH) will be selected for the analysis purpose. This approach enables an all-inclusive scrutiny of enterprises operating within Greece market setting. The dataset used in this study was derived from Refinitiv's DataStream database which is covering the period between 2017 and 2023. Refinitiv DataStream is a comprehensive financial and macroeconomic data platform that gives historical and current data for various asset classes and global markets. By integrating data from Refinitiv's DataStream system, a comprehensive examination of the relationship between ESG performance and stock market returns can be made. This would require a consistent high frequency financial dataset spanning across many years (2017-2023) which allows detailed time series analysis. Further enrichment of the dataset comes from inclusion of ESG scores and GICS classifications which provide different dimensions for analyzing the results further while ensuring that it relies on rich and dependable sources of information.

After the data cleaning process, it was identified that out of 184 Greek companies, 29 have available ESG scores. This refined data set, consisting of these 29 companies, will be the focus of our analysis. Table A1 in the Appendix lists the companies included in the analysis.

The primary data variables used in this study are:

- **ZAV(TR.TotalReturn1Monthly)**: Monthly total return of the companies, capturing the financial performance of each company. [January 2017 – December 2023]
- **ZAV(TR.TRESGScore)**: ESG scores of the companies, provided on an annual basis and reflect the environmental, social, and governance performance of each company. [Annual scores from 2017-2023].

To further examine how different ranges of ESG scores affect stock returns, we categorized the ESG scores into quartiles and dummy variables were created for each quartile:

- **First Quartile (0 to 25):** Companies with ESG scores between 0 and 25.
- **Second Quartile (>25 to 50):** Companies with ESG scores greater than 25 and up to 50.
- **Third Quartile (>50 to 75):** Companies with ESG scores greater than 50 and up to 75.
- **Fourth Quartile (>75 to 100):** Companies with ESG scores greater than 75 and up to 100.

In addition to the main variables, we include several control variables to account for other factors that might influence stock returns:

- **GICS Industry Name:** The Global Industry Classification Standard (GICS) industry name, which classifies companies into specific industry sectors. The goal was to control sectoral effects specific to stock returns and ESG performance that are industry related.
- We proceeded with a categorization of the given GICS sectors into four broader categories, and made dummy variables based on the nature of their operations.
 1. **Financial Services**
 2. **Industrial and Consumer Services**
 3. **Energy and Utilities**
 4. **Telecommunications and Technology**

ZAV(TR.CompanyMarketCapitalization): We also categorized the companies based on their market capitalization [Annual values from 2017-2023]. Given that the median market capitalization in the dataset is 600, three categories were established to capture the size effects and dummy variables were created for each category:

- **Small Companies:** Market Cap less than 300 (below half the median)

- **Medium Companies:** Market Cap between 300 and 900 (within half the median and 1.5 times the median)
- **Large Companies:** Market Cap greater than 900 (above 1.5 times the median)

The leading dependent variable under study here is the return on stocks and the key independent variable include overall ESG scores which cover environmental factors (E), social issues (S), governance (G). Control variables in the regression models include firm specific factors like size and industry classifications.

3.3 Data analysis and econometric model specification

Descriptive statistics are necessary during summarizing distribution patterns associated with within-sample ESG scores and stock returns thereby giving an initial understanding of the data. In order to assess whether there is a relationship between ESG scores and stock returns, statistical tests such as t-test it is applied. Correlation Analysis helps determine how closely related are the ESG scores in relation to financial performance metrics. The regression analysis utilizes Ordinary Least Squares (OLS) estimation to examine the extent to which ESG scores influence stock returns, controlling for relevant variables.

The regression model 1 aims to examine the impact of ESG scores on stock returns while controlling for company size and industry classification. The model can be specified as follows:

$$\text{Return}_i = \beta_0 + \beta_1 \text{ESG}_i + \beta_2 \text{Size}_i + \beta_3 \text{GICS}_i + \epsilon_i \quad (1)$$

where:

- Return_i is the monthly stock return for company i.
- ESG_i the ESG score for company i.
- Size_i is the market capitalization for company i.

- $GICS_i$ represents the industry classification for company i , using dummy variables for the different industry categories.
- β_0 is the intercept term.
- $\beta_1, \beta_2, \beta_3$ are the coefficients for the respective independent variables.
- ϵ_i is the error term.

To explore the influence of different ESG score ranges, model 1 can be first altered and second expanded by categorizing ESG scores into quartiles and including dummy variables for each quartile.

So, we have 2 new regression models:

$$\text{Return}_i = \beta_0 + \beta_1 \text{ESG_scale}_i + \beta_2 \text{Size}_i + \beta_3 \text{GICS}_i + \epsilon_i \quad (2)$$

This variable represents the scaled ESG scores of the companies. It measures how ESG performance, when scaled, influences the monthly stock returns. A positive coefficient β_1 suggests that higher ESG scores are associated with higher stock returns, whereas a negative coefficient suggests the opposite.

$$\text{Return}_i = \beta_0 + \beta_1 \text{ESG2}_i + \beta_2 \text{ESG3}_i + \beta_3 \text{ESG4}_i + \beta_4 \text{Size}_i + \beta_5 \text{GICS}_i + \epsilon_i \quad (3)$$

where:

- β_n ($n=1,2,3$) are the coefficients for the respective ESG quartiles.

Note that to avoid multicollinearity issues in the regression analysis when using dummy variables for ESG score quartiles, we excluded one dummy variable in the regression model 2. Specifically, we excluded the dummy variable for the lowest quartile (ESG1).

Therefore, by following this methodology, we expect to address the research question through empirical analysis for better understanding on the role played by ESG criteria on Greek companies' stock market performance. The results of this study have important implications for investors who are interested in sustainable investments and corporate governance practices as well as policy implications.

4. Results and Interpretation

4.1 Descriptive Statistics

The descriptive statistics presented in Table 1 provide an overview of the dependent and independent variables of the analysis. The dataset comprises 2,436 observations, providing a substantial sample size for robust analysis.

Table 1

Descriptive Statistics

Measure	Returns	ESG
Mean	1.684	47.063
Median	0.618	49
Maximum	343	86
Minimum	-68	2
Std. Dev.	14.92	24.915
Skewness	5.749	-0.171
Kurtosis	120.857	1.79
J.B.	1423285	160.445
pvalue	0.000	0.000

Note. N = 2436

For **returns**, the mean measure is 1.68, indicating that, on average, companies experience positive returns. However, the median monthly return of 0.618 is lower than the mean, suggesting that while most returns are modestly positive, there are some companies with exceptionally high returns that skew the average upwards. The maximum monthly return observed is 343, while the minimum return is -68, indicating that some companies have experienced considerable negative returns. The standard deviation of 14.92 reflects high

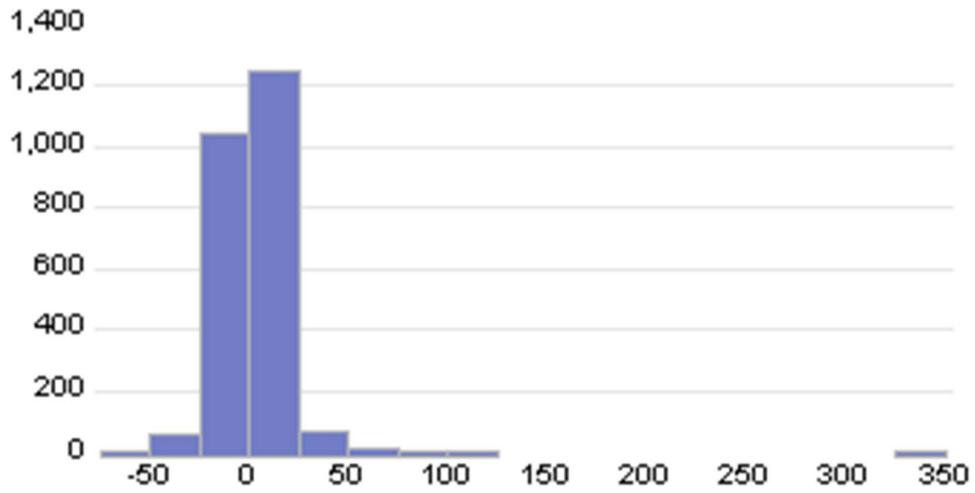
variability in monthly returns and the skewness of 5.749 is markedly positive, indicating a distribution with a long right tail. The kurtosis value is equal to 120.857 which is extremely high, indicating heavy tails and a sharp peak, pointing once more that there are many outliers (Graph 1). The Jarque-Bera statistic of 1,423,285 with a p-value of 0.000 further confirms that the returns are not normally distributed.

For **ESG scores**, the average score across companies is 47.063, suggesting a mid-range performance in terms of ESG criteria. The median ESG score is 49, very close to the mean, indicating a relatively symmetric distribution around the middle value of the scoring range. The highest ESG score in the dataset is 86, showing that some companies exhibit very high ESG performance, while the lowest score is 2, indicating some companies have very poor ESG performance. The standard deviation of 24.915 reveals considerable variation in ESG scores among companies, reflecting diverse levels of sustainability practices. The skewness of -0.171 is slightly negative, indicating a distribution that is approximately symmetric but with a slight tendency towards lower ESG scores. The kurtosis value of 1.79 indicates fewer and less extreme outliers compared to a normal distribution (Graph 2). The Jarque-Bera statistic of 160.445 with a p-value of 0.000 suggests that the ESG scores are not perfectly normally distributed, although the deviation from normality is not as extreme as in the returns.

Graph

1

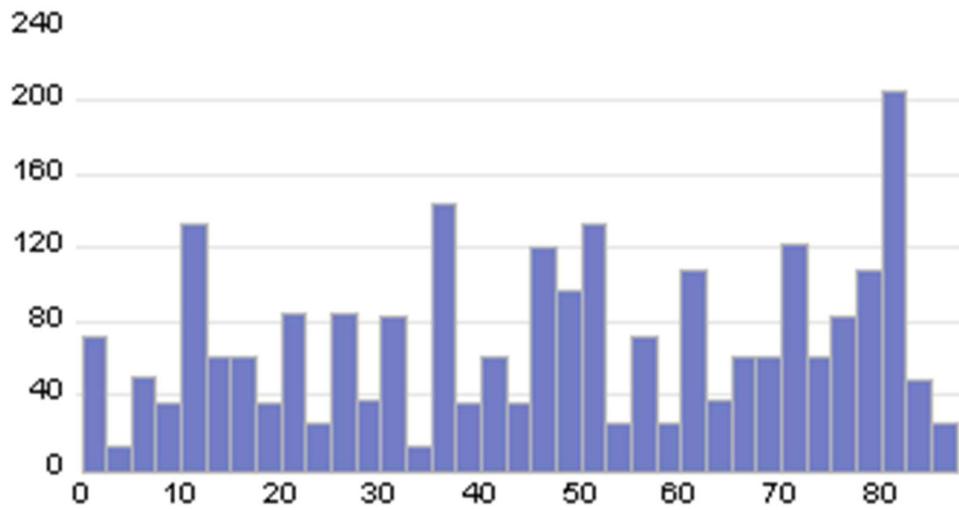
Histogram of Returns



Graph

2

Histogram of ESG scores



4.2 Correlation analysis

Table 2 presents the correlation analysis of our data. The correlation coefficient between Returns and ESG Scores is -0.014, suggesting a very weak negative correlation. However, the coefficient is not statistically significant. The correlation coefficient between the variables Returns and Size is -0.005 indicating a very weak negative relationship. However, the coefficient is not statistically significant. The correlation coefficient between the variables Returns and GICS is -0.013 indicating a very weak negative correlation while the coefficient is not statistically significant. The correlation coefficient between the variables ESG and size is -0.628 and statistically significant, indicating a moderate negative relationship. This implies that smaller companies tend to have higher ESG scores compared to larger companies. The correlation coefficient between the variables ESG and GICS is -0.050 and statistically significant indicating an almost nonexistent negative relationship.

Table 2

Correlation analysis

	Returns	ESG	Size	GICS
Returns	1.000			
ESG	-0.014	1.000		
Size	-0.005	-0.628	1.000	
GICS	-0.013	-0.0532	-0.050	1.000

Note. N = 2436. Bolt p<0.05

4.3. Regression analysis

4.3.1. Model 1

The regression analysis of Model 1 presented in Table 3 reveals that neither ESG scores, company size, nor industry classifications (GICS) significantly predict monthly returns. Specifically, the coefficients for ESG scores (-0.183), size (-0.457), and GICS (-0.275) indicate negative relationships with monthly returns, but none of these relationships are statistically significant as $p > 0.05$. The extremely low R square (0.0007) and the non-significant F-statistic indicate that the overall model is not statistically significant in predicting monthly returns. This reveals that ESG scores, company size, and industry classifications do not collectively provide meaningful explanatory power for variations in short-term financial performance among the companies analyzed.

Table 3

Regression Analysis

Variables	Coefficient	SE	p
ESG	-0.183	0.016	0.241
Size	-0.457	0.479	0.340
GICS	-0.275	0.354	0.437
C	1.750	2.269	0.023

Note. N = 2436.

4.3.1. Model 2

In the regression analysis of Model 2 we investigated the relationship between stock returns and categorized ESG scores, along with the control variables Size and GICS. The coefficient of -0.618 indicates that companies in higher category have lower stock returns. However, the

p-value of 0.094 indicates that while this relationship approaches conventional levels of significance (e.g., $\alpha = 0.10$), it does not reach statistical significance at the stricter $\alpha = 0.05$ level.

Table 4

Regression Analysis

Variables	Coefficient	SE	p
ESG_scale	-0.618	0.369	0.094
Size	-0.589	0.474	0.214
GICS	-0.351	0.363	0.334
C	5.003	1.891	0.008

Note. N = 2436.

Table 5 presents the independent samples t-test comparing the average returns across different quantiles of ESG scorers. With a p-value of 0.016, the independent samples t-test suggests that there is a statistically significant difference in average returns between high and low ESG scorers in the dataset. This finding implies that companies with higher ESG scores may indeed have different average returns compared to those with lower ESG scores.

Table 5

Independent Samples T-Test

	df	Prob
T-test	4786	0.016

Note. N = 2436.

4.3.1. Model 3

Due to this, we conducted a third regression analysis that involved dummy variables for each ESG quartile. This is possible to discover in Table 6. ESG2 (Second Quartile) has its coefficient at -0.5855, and it is statistically significant at $\alpha = 0.10$. The implication here is that companies scoring between 25-50 on the scale of ESG tend to produce lower monthly returns compared to any other quartile. Nevertheless, ESG3 (Third Quartile) has a slight negative coefficient of -0.847, meaning that companies with their scores in the third quartile (>50 through 75) have poor results although this does not show any meaningful outcome while conducting the test ($p = 0.375$). In terms of returns, companies with ESG4 (Fourth Quartile) record the worst performance indicated by an exceptionally low magnitude of -2.130 ($p = 0.047$). The coefficient for Size is -0.499 implying that larger firms as measured by market capitalization tend to deliver less return per month despite its insignificance towards statistics ($p = 0.227$). However, GICS' coefficient equals -0.358 which means industry classification does not affect monthly returns significantly as could be seen from $p = 0.318$

Table 6

Regression Analysis

Variables	Coefficient	SE	p
ESG2	-0.5855	0.852	0.063
ESG3	-0.847	0.954	0.375
ESG4	-2.13	1.078	0.047
Size	-0.499	0.459	0.227
GICS	-0.358	0.358	0.318
C	4.427	2.269	0.023

Note. N = 2436.

To test whether the residuals from the regression models exhibit heteroskedasticity we performed the Breusch-Pagan test. The results for Model 1 had a p-value of 0.059, for Model 2 it was 0.070, and for Model 3 it was 0.110 suggesting that there is no significant evidence to reject the null hypothesis at conventional significance levels ($\alpha=0.05$ or $\alpha=0.01$). In other words, there is no sufficient evidence to conclude that there is heteroskedasticity in the residuals of the three models. So, we can assume that the variance of the residuals is relatively constant across observations, which is a typical assumption in Ordinary Least Squares (OLS) regression analysis.

4.4 Summary of findings

The returns data is highly volatile with a significant number of outliers, both positive and negative. The high skewness and kurtosis suggest that extreme values are prevalent, impacting the overall distribution. The ESG scores are more symmetrically distributed with moderate variability. While there are some outliers, the distribution is closer to normal compared to the returns.

The weak correlation suggests that other factors beyond ESG scores predominantly drive variations in monthly returns. While ESG considerations are increasingly important for investors and stakeholders, this analysis indicates that their direct impact on short-term financial returns, as captured by monthly data, is minimal in this dataset.

The correlation analysis suggests that ESG scores do not have a significant linear relationship with monthly returns and other factors may have a stronger influence on financial performance. The moderate negative correlation between ESG scores and company size indicates that smaller companies tend to prioritize or achieve higher ESG scores compared to larger

companies. The correlations involving GICS suggest that industry classifications have non-significant predictive power over monthly returns and are very weak on ESG scores.

Based on the regression results of Model 1, ESG scores, firm size (market capitalization), and industry classifications (GICS) do not significantly predict monthly returns in this dataset. However, the results of Model 2, along with t-test findings, suggest that ESG scores may indeed influence average returns differently across categories. Finally, Model 3 reveals a negative relationship between ESG scores and monthly stock returns. Specifically, companies with higher ESG scores in the fourth quartile (>75 to 100) tend to experience significantly lower returns compared to those in the lower quartiles. This finding contradicts the expectation that higher ESG performance would correlate positively with financial performance in the short term. The coefficients for ESG2 and ESG3 suggest a trend towards lower returns as ESG scores increase, though these findings are not statistically significant at conventional levels.

5. Discussion

According to descriptive statistics analysis, the distribution of returns is severely non-normal as indicated by considerable skewness and kurtosis. Consequently, this indicates that the incidence of outliers or extreme values seriously affects return distribution. With respect to ESG scores, however, they are normally distributed. These results were consistent with Górká & Kuziak (2022) and Assael et al. (2023), who maintained that high volatility and extreme values characterized conventional returns while ESG scores followed a more symmetric distribution with moderate variability and fewer outliers closer to a normal distribution shape. In this regard, it is worth noting that unlike the skewed pattern of stock market returns where myriads of adverse events can be incorporated into the calculation process by few extreme values at one end of the spectrum. The presence of outliers in stock market returns can have a substantial impact on performance and risk management, emphasizing the importance of

understanding and managing extreme values (Aldieri et al., 2023). Conversely, the more balanced distribution of ESG scores suggests a more stable and predictable relationship between ESG factors and price returns, highlighting the potential for sustainable and consistent investment strategies based on environmental, social, and governance considerations.

Low correlation between monthly returns and ESG score implies that other than ESG considerations, there exist some other factors influencing monthly returns (Marzuki et al., 2023). This finding supports literature positing that while investors' growing interest in ESG factors has become prevalent, they rarely have immediate impacts on short-term financial results. This is supported by regression analysis which indicated that the predictor variables ESG score, Firm size (market capitalization) and industry classifications (GICS) do not have any significant effect on monthly returns in this sample. The variables had not statistically significance coefficients and the R-squared value was too low (0.007). This means that, these factors explained only a small portion of variance in monthly returns. This can be explained by the findings of Eccles et al., (2014) who state high sustainability firms perform better over the long term, but it is unclear how they fare in the short run. This discrepancy may arise because the benefits of sustainable practices often accrue over longer periods, involving factors such as improved risk management, enhanced brand reputation, and operational efficiencies that are not immediately reflected in short-term financial returns. Additionally, market perceptions and investor behaviors that favor short-term gains might overshadow the incremental advantages of sustainability in the short run. Thus, the low explanatory power of the model in this study highlights the complexity and time-dependent nature of the relationship between sustainability practices and financial performance.

The moderate inverse relationship between company size and ESG scores means that smaller corporations tend to prioritize or achieve better quality scores over larger ones. This could

reflect the smaller companies being nimbler and more selective while adopting or excelling at sustainable practices larger organizations may find it challenging to implement holistic ESG strategies compared due to their scale and complexity despite having more resources. This is in line with Dremptic et al. (2020) perspective that firm size matters for ESG.

The correlations among the GICS sectors are weak, suggesting very minimal predictive power of industry classifications on monthly returns and weak impact on ESG scores. It implies that industry-specific factors do not play an influential role in determining the relationship between ESG performance and financial returns in this dataset. This has been supported by Crespi & Migliavacca (2020) who argued that there exists no substantial variation among industries with respect to the benefits of ESG investment and industry specific dynamics often have no significant implications on the effects of ESG.

An independent samples t-test conducted to compare average returns between high and low ESG scorers yielded a statistically significant result (p-value = 0.016). This suggests there is meaningful difference in average returns for these two groups. Despite weaknesses observed within correlation and regression, this t-test indicates that businesses which have higher scores could actually exhibit different patterns when it comes to their returns as compared with those with lower values. Some of these reasons may include investor sentiment, market perception towards sustainability as well as long-term risk management benefits linked with improved performance in ESG criteria.

The results from Model 3 present a challenge to the traditional assumption that higher ESG performance would result in better short term financial outcomes by establishing a negative relationship between ESG scores and monthly stock returns. In particular, companies with the highest ESG score quartile (>75 to 100) tend to have significantly lower monthly returns than those in the lower quartiles. Thus, this is interesting because it shows that although companies

may have environmental, social and governance priorities, their efforts do not always pay off immediately.

This observation is consistent with recent research on the complexities of integrating ESG into an investment process. We have already mentioned in the literature review section that empirical literature found mixed evidence regarding relationships between stock returns and ESG performance. According to Friede et al. (2015), their meta-analysis generally found non-negative connections between corporate financial performance and ESG criteria, albeit varying in strength depending on factors such as time frames, geographical location, and industry sector. Our findings, although not aligned with this consensus, are significant as they illuminate how this relationship operates across different ESG score ranges. The lack of statistical significance suggests that factors other than those associated with sustainable investments may play a role in influencing monthly stock returns within our dataset. This underscores the complexity and variability of the relationship between ESG practices and financial performance, urging further investigation into contextual and situational factors that shape these dynamics.

6. Conclusion

To conclude, the initial motivation in this study was to investigate the relationship between ESG scores and firms' stock market returns for firms listed in the Athens Stock Exchange (ASE) over the period 2017-2023. To achieve this objective, a quantitative methodology was employed. We first conducted descriptive statistical analysis which was necessary during summarizing distribution patterns associated with within-sample ESG scores and stock returns. Secondly, we carried out a correlation analysis which helped us to determine how closely related are the ESG scores in relation to financial performance metrics. Lastly, we conducted regression analysis utilizing Ordinary Least Squares (OLS) estimation using 3 models in order

to examine the extent to which ESG scores influence stock returns. The regression model 1 aims to examine the impact of ESG scores on stock returns while controlling for company size and industry classification. The regression model 2 investigated the relationship between stock returns and categorized ESG scores, along with the control variables Size and GICS. The regression model 3 was conducted because the findings of the t-test implied that companies with higher ESG scores may indeed have different average returns compared to those with lower ESG scores. Thus, we included 4 dummy variables for each ESG quartile and excluded the first ESG quartile for multicollinearity purposes. For the collection of the ESG scores, monthly returns from these stocks, firm sizes (market capitalization), as well as their industry classification according to GICS we used Refinitiv's DataStream. A sample of 29 out of 184 Greek firms has disclosed ESG scores, and thus we considered these for the analysis.

Our findings reveal that monthly return is not significantly influenced by ESG scores, company size and industry classifications as indicated by regression results where R-square value is very small. Moreover, while weak correlations have been noticed, there are meaningful differences in average returns between high and low ESG scorers according to a t-test. Unexpectedly, Model 3 of regression analysis shows negative relationship between ESG scores and monthly return for those companies with extremely high ESG score (>75 to 100), thereby challenging belief about immediate financial gains from strong adoption of such practices. This finding contradicts meta-analytic results that generally found positive relationships between long-term corporate financial outcomes and ESG performance.

The findings from the three models demonstrate why financial implications of ESG practices has to consider more dimensions across different timespans. Also, it suggests a need for further research so as to comprehend how, when and under what contexts does any release of policies concerning ethical business conduct bring about both short-term profits and long-term gains on shares traded within dissimilar markets. In future studies, should include more variables or

alternative model specifications to increase the model's explanatory power. Moreover, further insights into the intricate link between sustainability practices and financial performance could be gained from conducting longitudinal studies that involve taking into account investor behavior as well as market conditions over extended periods of time with incorporation of such indicators as ESG scores.

References

- Aldieri, L., Amendola, A., & Candila, V. (2023). The Impact of ESG Scores on Risk Market Performance. *Sustainability*, 15(9), 7183.
- Amel-Zadeh, A., & Serafeim, G. (2018). Why and how investors use ESG information: Evidence from a global survey. *Financial analysts journal*, 74(3), 87-103.
- Assael, J., Carlier, L., & Challet, D. (2023). Dissecting the explanatory power of ESG features on equity returns by sector, capitalization, and year with interpretable machine learning. *Journal of Risk and Financial Management*, 16(3), 159.
- Aupperle, K. E., & Van Pham, D. (1989). An expanded investigation into the relationship of corporate social responsibility and financial performance. *Employee Responsibilities and Rights Journal*, 2, 263-274.
- Bardos, K. S., Ertugrul, M., & Gao, L. S. (2020). Corporate social responsibility, product market perception, and firm value. *Journal of Corporate Finance*, 62, 101588.
- Crespi, F., & Migliavacca, M. (2020). The determinants of ESG rating in the financial industry: The same old story or a different tale?. *Sustainability*, 12(16), 6398.
- Derwall, J., Bauer, R., Guenster, N., & Koedijk, K. C. (2004). Socially responsible investing: the eco-efficiency premium puzzle. Available at SSRN 551590.
- Drempetic, S., Klein, C., & Zwergel, B. (2020). The influence of firm size on the ESG score: Corporate sustainability ratings under review. *Journal of business ethics*, 167(2), 333-360.
- Edmans, A. (2011). Does the stock market fully value intangibles? Employee satisfaction and equity prices. *Journal of Financial economics*, 101(3), 621-640.
- Escrig-Olmedo, E., Muñoz-Torres, M. J., & Fernandez-Izquierdo, M. A. (2010). Socially responsible investing: sustainability indices, ESG rating and information provider agencies. *International journal of sustainable economy*, 2(4), 442-461.
- Gavrilakis, N., & Floros, C. (2023). ESG performance, herding behavior and stock market returns: evidence from Europe. *Operational Research*, 23(1), 3.
- Gompers, P., Ishii, J., & Metrick, A. (2003). Corporate governance and equity prices. *The quarterly journal of economics*, 118(1), 107-156.
- Górka, J., & Kuziak, K. (2022). Volatility modeling and dependence structure of ESG and conventional investments. *Risks*, 10(1), 20.
- Halbritter, G., & Dorfleitner, G. (2015). The wages of social responsibility—where are they? A critical review of ESG investing. *Review of Financial Economics*, 26, 25-35.
- Hale, J. (2020). Sustainable Fund Flows in 2019 Smash Previous Records: This could be the leading edge of a huge wave of assets into sustainable funds. Available online here <https://www.morningstar.com/sustainable-investing/sustainable-fund-flows-2019-smash-previous-records>. [06/2024]
- Kacperczyk, M., Peng, L., & Xie, J. (2023). *ESG investing and stock return comovements*. Working Paper.

- Kerber, R. & Jessop, S. (2021). How 2021 became the year of ESG investing. Available online here <https://www.reuters.com/markets/us/how-2021-became-year-esg-investing-2021-12-23/>. [06/2024]
- Khan, M. (2019). Corporate governance, ESG, and stock returns around the world. *Financial Analysts Journal*, 75(4), 103-123.
- Kim, M., & Kim, Y. (2014). Corporate social responsibility and shareholder value of restaurant firms. *International Journal of Hospitality Management*, 40, 120-129.
- La Torre, M., Mango, F., Cafaro, A., & Leo, S. (2020). Does the ESG index affect stock return? Evidence from the Eurostoxx50. *Sustainability*, 12(16), 6387.
- Landi, G., & Sciarelli, M. (2019). Towards a more ethical market: the impact of ESG rating on corporate financial performance. *Social responsibility journal*, 15(1), 11-27.
- Li, Z. (2006). Research on the Correlation between Corporate Social Responsibility and Corporate Value: Empirical Evidence from Listed Companies in Shanghai Stock Exchange. *China Industrial Economics (02)*, 77-83.
- Manrique, S., & Martí-Ballester, C. P. (2017). Analyzing the effect of corporate environmental performance on corporate financial performance in developed and developing countries. *Sustainability*, 9(11), 1957.
- Martini, A. (2021). Socially responsible investing: from the ethical origins to the sustainable development framework of the European Union. *Environment, Development and Sustainability*, 23(11), 16874-16890.
- Marzuki, A., Nor, F. M., Ramli, N. A., Basah, M. Y. A., & Aziz, M. R. A. (2023). The influence of ESG, SRI, ethical, and impact investing activities on portfolio and financial performance—bibliometric analysis/mapping and clustering analysis. *Journal of Risk and Financial Management*, 16(7), 321.
- McGuire, J. B., Sundgren, A., & Schneeweis, T. (1988). Corporate social responsibility and firm financial performance. *Academy of management Journal*, 31(4), 854-872.
- Mittal, R. K., Sinha, N., & Singh, A. (2008). An analysis of linkage between economic value added and corporate social responsibility. *Management Decision*, 46(9), 1437-1443.
- Morgan Stanley Institute for Sustainable Investing (2024). Individual Investors' Interest in Sustainability Is on the Rise. Available online here <https://www.morganstanley.com/ideas/sustainable-investing-on-the-rise>. [06/2024]
- Moving worlds (2023). What Is ESG Reporting — and How to Do It. Available online here <https://movingworlds.org/esg-reporting-guide>. [06/2024]
- Mytilineos (2021). ESG Performance Statement. Available online here <https://sdr2021.mytilineos.gr/en/sdr/esg-performance-statement>. [06/2024]
- Posnikoff, J. F. (1997). Disinvestment from South Africa: They did well by doing good. *Contemporary Economic Policy*, 15(1), 76-86.
- Rezaee, Z. (2017). Corporate sustainability: Theoretical and integrated strategic imperative and pragmatic approach. *The Journal of Business Inquiry*, 16.

- Sundaram, A. K. (2023). ESG investing. *Handbook of Business and Climate Change*, 503-524.
- Takahashi, H., & Yamada, K. (2021). When the Japanese stock market meets COVID-19: Impact of ownership, China and US exposure, and ESG channels. *International Review of Financial Analysis*, 74, 101670.
- Taylor, T.L. & Collins, S. (2018). Ingraining sustainability in the next era of ESG investing: New opportunities are emerging for investment managers to adapt as investor preferences evolve. Available online here <https://www2.deloitte.com/xe/en/insights/industry/financial-services/esg-investing-and-sustainability.html>. [06/2024]
- Teoh, S. H., Welch, I., & Wazzan, C. P. (1999). The effect of socially activist investment policies on the financial markets: Evidence from the South African boycott. *The Journal of Business*, 72(1), 35-89.
- Trahan, R. T., & Jantz, B. (2023). What is ESG? Rethinking the “E” pillar. *Business Strategy and the Environment*, 32(7), 4382-4391.
- Velte, P. (2017). Does ESG performance have an impact on financial performance? Evidence from Germany. *Journal of global responsibility*, 8(2), 169-178.
- Waddock, S. A., & Graves, S. B. (1997). The corporate social performance–financial performance link. *Strategic management journal*, 18(4), 303-319.
- Wang, J.Q., & He, J.Y. (2009). Corporate Governance, Corporate Economic Performance and Corporate Social Responsibility: An Empirical Study Based on the Data of Chinese Manufacturing Listed Companies. *Economic Jingwei (02)*, 83-86.
- Wright, P., & Ferris, S. P. (1997). Agency conflict and corporate strategy: The effect of divestment on corporate value. *Strategic management journal*, 18(1), 77-83.
- Zhang, F., & Jung, J. Y. (2020). Changes in the influence of social responsibility activities on corporate value over 10 years in China. *Sustainability*, 12(22), 9506.

Appendix

Table A1

Companies included in the ESG analysis

Company Common Name
Bank of Greece
Piraeus Financial Holdings SA
Intracom Holdings SA
GEK Terna SA
Alpha Services and Holdings SA
National Bank of Greece SA
Jumbo SA
Hellenic Exchanges Athens Stock Exchange SA
Eurobank Ergasias Services and Holdings SA
Technical Olympic SA
Ellaktor SA
MIG Holdings SA
Hellenic Telecommunications Organization SA
Gr Sarantis SA
Lamda Development SA
Mytilineos SA
HELLENiQ ENERGY Holdings SA
Athens Water Supply and Sewerage Company SA
Greek Organization of Football Prognostics SA
Motor Oil Hellas Corinth Refineries SA
Public Power Corporation SA
Piraeus Port Authority SA
Diana Shipping Inc
StealthGas Inc
Danaos Corp
Aegean Airlines SA
Terna Energy SA
Neurosoft Software Production SA
Holding Company ADMIE IPTO SA