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The Influence of ESG Performance on Euronext Stock Returns.

A influência do desempenho ESG na rendibilidade das ações da Euronext.

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Abstract

Considering the growing relevance of environmental, social and governance (ESG) factors in investment decision-making, this study investigates the relationship between the ESG performance of Euronext companies and their stock returns. The central question is the need to understand whether better ESG performance translates into superior financial returns for investors and what factors may influence this relationship. The empirical study focuses on the period between 2020 and 2022, on a sample of companies that are part of the Euronext financial centers in Lisbon, Amsterdam, Paris, and Brussels. The results indicated a positive and statistically significant relationship between Sustainalytics' ESG rating and stock returns, suggesting that companies with stronger ESG practices tend to have better financial performance. Additionally, the study observed a negative impact of leverage and inflation on stock returns, while ROA and real GDP growth had a positive effect. However, no significant relationship was found between companies belonging to the Eurozone ESG large 80 index (ESG 80) and stock returns, indicating that inclusion in the index may not guarantee superior returns. Investors are advised to carefully consider the ESG performance of individual companies for a profitable investment strategy. Euronext is recommended to provide an individual ESG rating to aid this analysis. These conclusions contribute to understanding the growing importance of sustainability in investments and highlight the need for a more detailed analysis of companies' ESG practices.

Keywords: Stock Returns, Euronext, Eurozone ESG Large 80, ESG, Sustainable Investment.

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1. Introduction

ESG practices are playing an increasingly important role in the world economy (Khan, 2019; Luo, 2022; Li et al., 2023). Identifying the importance of these criteria, the United Nations formalized the sustainable development goals adopted by governments worldwide (United Nations, 2015). Promoting sustainability through achieving these goals requires profound changes in the economic environment. Consumers, investors, and other stakeholders expect companies to adopt sustainable business models. Furthermore, regulatory authorities drive ESG integration, directing private capital flows toward sustainable investments (Hubel & Scholz, 2020; Broccardo et al., 2022; Neitzert & Petras, 2022; Zaremba, 2023; Yadav et al., 2025; Yang, 2025).

This investment philosophy seemingly does not stop gaining importance. Tucker and Jones (2020) found that companies that adopt ESG practices are much more sought after by 85% of millennials. Amel-Zadeh and Serafeim (2018) indicate that the second most important motivation for investment professionals to use ESG criteria is the growing client demand. Some top investment management firms are even centralizing their investment strategies around ESG practices. For example, BlackRock, the world's largest asset manager, announced in 2020 that it would change its strategy for investments related to climate change issues (BlackRock, 2020). Pástor and Vorsatz (2020), Ferriani and Natoli (2021), Feng et al. (2022) showed that investment funds with more sustainable assets attracted a greater amount of net inflows and provided better returns during the crisis caused by Covid-19, when compared to funds with high ESG risk.

Despite the increased interest in this topic, there is still little large-scale empirical evidence that helps define or capture the indicators through which ESG initiatives impact stock returns (Barrymore & Sampson, 2021; Li et al., 2023). With this work, we contribute to the literature on several levels. Firstly, we use the ESG 80 as an indicator of the ESG performance of Euronext companies. Due to being recent, this index can incorporate updated methodologies for evaluating companies' ESG performance. Secondly, it uses the Generalized method of moments (GMM) and quantile regression methodology, which allows for estimating the model parameters more efficiently and robustly, considering the endogeneity of explanatory variables and heterogeneity of

effects in the different quantiles of the dependent variable. Thirdly, focusing specifically on Euronext fills a gap in the literature by providing specific knowledge on how ESG practices affect the annual returns of shares listed on this European stock exchange. Fourthly, including the Sustainalytics ESG indicator ensures comparability and consistency in its analysis and is relevant for investors, companies, and regulators. Lastly, this study is relevant for Euronext, as well as all other global stock exchanges looking to develop the ESG asset market, because it suggests opportunities to improve their conduct.

The chapter is structured as follows: section 2 contains a literature review. Section 3 presents the methodology, the database used, the sample definition, and the variables used in the empirical part. In section 4 the results are presented and an analysis is carried out. Finally, the main conclusions of the study, its limitations, and suggestions for future investigations are presented.

2. Literature review

Currently, sustainability considerations are at the center of attention, with economic agents becoming increasingly more aware of ESG criteria and including them in the investment decision process (Blank et al., 2016; Lesser et al., 2016; Nagy et al., 2016; Verheyden et al., 2016; Liang e Renneboog, 2017; Revelli, 2017; Amel-Zadeh & Serafeim, 2018; Almeyda & Darmansya, 2019; Berg et al., 2019; Dyck et al. 2019; Giese et al., 2019; Henisz & McGlinch, 2019; Schoenmaker & Schramade, 2019; Consolandi et al., 2020; Dudás & Naffa, 2020; Hubel & Scholz 2020; Kaiser, 2020; Alda, 2020; Pástor & Vorsatz, 2020; Tucker & Jones, 2020; Giese et al., 2021; Maiti, 2021; Berg et al., 2022a; Erhart, 2022; Feng et al., 2022; Shanaev & Ghimire, 2022; Serafeim & Yoon, 2023; Tan & Pan, 2023; Zaremba, 2023). An investment strategy that adopts ESG criteria considers environmental, social, and governance factors, along with financial and macroeconomic factors (Van Duuren et al., 2016; Pedersen et al., 2021; Berg et al., 2022b).

Analyzing the ESG criteria [4] by specific area, it is relevant to indicate that the environmental factor involves the impacts on the physical environment and the risks that a company and its suppliers/partners face due to climate events. The social factor considers social impacts and associated risks arising from the actions of society, employees, customers, and communities where the company operates. Finally, the governance factor evaluates the time and quality of decision-making, governance structure, and distribution of rights and responsibilities among the various stakeholder groups, in favor of a positive impact on society and risk mitigation.

Nowadays, contrary to what happened in the past, investors and stakeholders are very interested in knowing how companies allocate their capital and how their business model behaves, especially regarding ESG criteria (Coppola, 2016; Kaiser, 2020; Madison & Schiehll, 2021; Egorova et al., 2022). Shobhwani and Lodha (2023) state that this change in economic agents is motivated by the desire to move away from a short-term shareholder value policy to a more sustainable management strategy that includes the interests of all stakeholders and society. However, the lack of uniformity regarding the measurement of the performance of the ESG criteria proves to be a difficult task for agents present in the capital market and, therefore, the validity of these notations has been critically debated (Cooper et al., 2005; Becchetti & Ciciretti, 2009; Chatterji et al., 2009; Gangi & Varrone, 2018; Brandon et al., 2021; Cornell, 2021; Lambert et al., 2021; Avramov et al., 2022; Berg et al., 2022b; Erhart, 2022; Luo, 2022; Serafeim & Yoon, 2023). Chatterji et al. (2009), Barrymore and Sampson (2021) state that the ESG information currently reported is, at best, deficient and has little relation to the actual performance of companies. Berg et al. (2019), Dimson et al. (2020), and Gyonyorova et al. (2021) indicate that the divergence of existing ESG ratings by entities that operate in the market makes their usability and validity of little relevance for the creation of investment strategies in stocks. Additionally, Clementino and Perkins (2021), Yang (2022), Tan and Pan (2023) suggest that company managers can manipulate reports on ESG practices to make companies appear more ethical and attractive (greenwashing practices).

[4] Consult Friede et al. (2015), Albuquerque et al. (2020), Dudás and Naffa (2020), Tucker and Jones (2020), Demers et al. (2021), Giese et al. (2021), Dinh (2022), Naeem and Cankaya (2022), Dinh (2023) and Kalia and Aggarwal (2023).

However, Euronext companies increasingly disclose ESG-related information as European Union regulations are issued to convert ESG reporting from voluntary and non-standardized to mandatory and standardized (European Parliament, 2022; Zaremba, 2023). The impact of ESG criteria on stock returns in capital markets has begun to be debated very recently. While some studies argue that incorporating ESG practices can harm overall performance and negatively affect stock returns, a growing body of research suggests a positive effect (Dudás & Naffa, 2020). Dinh (2023) indicates that the ESG criteria are the most recent risk factor in the analysis of companies and that investors are concerned with realizing their impact on determining the profitability of stocks traded in the capital market. However, the conclusions of recent studies remain inconclusive and contradictory (Revelli & Viviani 2015; Cornell, 2021).

Friede et al. (2015) sought to analyze the relationship between ESG criteria and companies' financial performance by analyzing approximately 2200 articles from the 1970s to 2015. The results show that 62% of articles suggest the existence of a positive effect between the two variables. This positive impact appears to be stable over the analyzed period and has remained unchanged since the mid-1990s, when the analysis was fragmented regarding the region and age of companies. The authors argue that rational investors should seek to adopt a long-term strategy that includes ESG factors to align their investment objectives with the broader objectives of society. In this sense, the study by La Torre et al. (2020) investigated how ESG criteria affect the stock returns of companies included in the Eurostoxx50 index between 2010 and 2018. The methodology used was based on panel data. The results suggest that companies with a better ESG rating have higher returns, with a statistically significant effect. Similar results are presented in the studies by Renneboog et al. (2008), Consolandi et al. (2009), Deng et al. (2013), Eccles et al. (2014), Dimson et al. (2015), Khan et al. (2016), Lins et al. (2017), Khan (2019), Alda (2020), Consolandi et al. (2020), Dudás et al. (2020), Liang and Renneboog (2020), Pástor and Vorsatz (2020), Serafeim (2020), Shan and Tang (2020), Ferriani and Natoli (2021), Berg et al. (2022b), Galema and Gerritsen (2025) with the authors arguing that this strategy is doubly successful, due to the positive returns it provides and the positive impacts it causes throughout society.

The literature indicates five more reasons that help explain the positive impact of ESG performance on stock returns. The first reason suggests that companies that effectively

implement ESG criteria in their business model have a significant competitive advantage, greater resilience, and a lower risk of falling stock prices (Giese et al., 2019; Albuquerque et al., 2020; Giese et al., 2020; Gunther et al., 2020; Kaiser, 2020; La Torre et al., 2020; Broadstock et al., 2021; Dumitrescu & Zakriya, 2021; Giese et al., 2021; Shih et al., 2021; Dinh, 2023; Galema & Gerritsen, 2025; Li et al., 2023; Zaremba, 2023). The second reason is that companies that pay close attention to ESG issues tend to be more proactive in identifying and mitigating risks. These risks may include the impacts of climate change, regulatory changes, and human rights issues, among others. This phenomenon can help companies avoid crises, fines, or regulatory fines, which can result in them obtaining more consistent net results, and causes them to obtain higher valuations of their price from financial analysts and greater demand from institutional and individual investors (Heinkel et al., 2001; Giese et al., 2019; Chairani & Siregar, 2021; Pedersen et al., 2021; Abdi et al., 2022; Berg et al., 2022b; Boido et al., 2022; Fabozzi et al., 2022; Roy et al., 2022; Serafeim & Yoon, 2022; Galema & Gerritsen, 2025; Shobhwani & Lodha, 2023). The third reason is the growing evidence that employees with higher satisfaction levels make companies more profitable in the stock market (Shan & Tang, 2020; Kalia & Aggarwal, 2023; Zaremba, 2023). In this sense, it is relevant to indicate that the ESG performance of companies contributes to a greater satisfaction, involvement and identification with the values from the employees, which will be reflected in greater effort on their part (Lichtenberg, 1981; Bartel, 1994; Turban & Greening, 1997; Friedman, 2007; Guiso et al., 2015; Lins et al., 2017; Bouslah et al., 2018; Demers et al., 2021; Ding et al., 2021; Halling et al., 2021; Wong et al., 2021). The fourth reason is the fact that some sustainable practices, such as reducing the consumption of natural resources, optimizing production processes and the efficient use of energy, can lead to an improvement in the operational efficiency of companies, with a consequent reduction in costs and increase in stock returns (Boido et al., 2022; Immel et al., 2022; Kalia & Aggarwal, 2023). Finally, the fifth reason is the evidence that credit institutions have already started to incorporate ESG performance into their pricing policy (Jiraporn et al., 2014; Stellner et al., 2015; Li et al., 2023). In this sense, some studies indicate that companies with better ESG performance benefit from a better rating classification by banks and investors and, therefore, can finance themselves with lower financing costs, with a consequent positive effect on their stock market price

(Albuquerque et al., 2020; Broccardo et al., 2022; Neitzert & Petras, 2022; Coelho et al., 2023).

However, transitioning to a sustainable economy is not a clear and easy path for investors and companies. Long-term value creation contrasts with the classic investment approach, which focuses on short-term profits and only considers financial risk (Van Duuren et al., 2016; Schoenmaker & Schramade, 2019). Recent studies indicate that ESG criteria negatively influence stock returns (Lee et al., 2019; Elgie & Lanoie, 2020; Barrymore & Sampson, 2021; Bolton & Kacperczyk, 2020). This negative association cannot be dissociated from agency theory, according to which investments with ESG criteria tend to generate insufficient returns and reduce shareholders' value. According to this theory, management may choose to improve the company's ESG rating at the expense of shareholders to build its reputation. In this sense, investments based on ESG criteria are, at best, wasteful and potentially harmful to shareholders. Thus, companies with a better ESG rating tend to have a negative return on their stocks, as these investments reflect management and/or agency problems. Furthermore, ESG investments can be an obstacle to the resilience of companies in times of crisis (Lys et al., 2015; Feng et al., 2022).

Another aspect that is mentioned to explain the negative association between ESG rating and stock returns is the lack of choice diversity (Aslaksen & Synnestwedt, 2003; Barnett & Salomão, 2006; Becchetti & Ciciretti, 2009; Gangi & Varrone, 2018; Hubel & Scholz, 2020). Generally, ESG ratings are only available for a limited number of stocks. Disregarding non-ESG-rated companies can reduce the return of a stock portfolio as the investment possibilities are drastically reduced due to a lack of diversification. Furthermore, ESG rating agencies predominantly cover large companies, resulting in a chronic shortage of small companies in ESG portfolios (Hubel & Scholz, 2020).

Fabozzi et al. (2022) analyzed the impact of Sustainalytics' ESG classification on company stock returns in Japan using the Ordinary Least Squares (OLS) and quantile regression methodologies. The results show that there is no evidence of a significant ESG impact for companies with an average financial performance. In contrast, companies with a strong and sometimes weak financial position are negatively affected by increased efforts regarding ESG practices. Li et al. (2023) investigate ESG performance's impact on Chinese stock returns. To this end, the authors gathered data

from companies from 2015 to 2022 and used the panel data methodology. The results show that stock returns relate negatively to ESG performance, and the results are robust to different ESG performance methods.

In addition to studies that point to a positive and negative relationship, some studies show a neutral relationship between ESG criteria and stock returns. Naffa and Fain (2022) analyzed the impact of ESG performance assessed by Sustainalytics on the return of shares in the MSCI ACWI index between 2015 and 2019. For this purpose, they used the OLS methodology with standard errors and GMM. The results corroborated the literature's neutrality argument, as ESG performance did not significantly impact stock returns. The neutrality between the variables is also reported in the studies by Heinkel et al. (2001), Van Beurden and Gössling (2008), Managi et al. (2012), Revelli and Viviani (2015), Halbritter and Dorfleitner (2015), Guo et al. (2017), Limkriangkrai et al. (2017), Luo and Balvers (2017), Zaremba and Czapkiewicz (2017), Breedt et al. (2019), Capelle-Blancard and Petit (2019), Hartzmark and Sussman (2019), Zerbib (2022), Demers et al. (2021), Pástor et al. (2021), Folger-Laronde et al. (2022), Dinh (2023), Spiegeleer et al. (2023).

Based on the literature analyzed, we propose our first research hypothesis. As the empirical results are not consensual, we did not define the expected sign of the relationship.

Hypothesis 1: Sustainalytics ESG Ratings Influence Euronext Stock Returns.

Euronext has been attentive to ESG issues. Proof of this is the creation of the ESG 80 in June 2020 (Euronext, 2021; Dinh, 2020; Dinh, 2023; Costa et al., 2024b). As its name implies, it is an index that, of the 300 companies that make up the Euronext Eurozone 300 index, reflects the evolution of the quotations of the 80 companies in the Eurozone with the best performance in terms of energy transition. The ESG 80 excludes companies involved in the production of weapons, tobacco, and charcoal (as sin stocks) and restricts the entry of others with poor scores on the evaluated criteria or that have some controversy related to the UN-sponsored compact on sustainable practices and socially responsible companies. The scores are provided by the Moody's ESG (Euronext, 2024).

Yilmaz et al. (2020) analyzed the inclusion of companies listed on the Turkish Stock Exchange in the BIST Sustainability Index (BIST SI), between 2014 and 2017. The

results show that there is no statistically significant evidence between inclusion in the BIST SI and the return on company stocks. Dinh (2023), in his study, analyzed the impact that belonging to the ESG 80 has on the daily, monthly, and quarterly returns of Euronext shares. To this end, the author selected 200 companies in the period between 2010 and 2021 and identified companies that belong to the ESG 80. The results suggest that the average returns of stocks that do not belong to the ESG 80 index are similar to those that do. This evidence holds across daily, monthly, and quarterly returns.

Based on the literature analyzed, we propose our second research hypothesis. As the empirical results are not consensual, we did not define the expected sign of the relationship.

Hypothesis 2: The presence of companies in the ESG 80 significantly influences the annual return of Euronext stocks.

3. Data, variables, methodology

3.1. Sample

The sample contains stocks from the financial centers of Amsterdam (41), Brussels (48), Lisbon (22), and Paris (200). Only data from non-financial companies that reported their annual results on December 31 and in Euro currency were collected (Ribeiro & Quesado, 2017; Fernandes & Costa, 2023; Costa et al., 2024a). The sample period covered the years 2020-2022 and includes 311 companies. Company-specific indicators and stock price data were obtained from The Wall Street Journal website (Costa et al., 2024a). Macroeconomic variables were taken from Eurostat. Based on studies by Berg et al. (2022b), Boido et al. (2022), Erhart (2022), Naffa and Fain (2022), Galema and Gerritsen (2025), Serafeim and Yoon (2023), ESG performance was obtained through Sustainalytics. This international ranking serves to assess companies' exposure to ESG risks. The higher the unmanaged risk, the higher and worse the ranking rating. From 0 to 10, the company's risk is insignificant; from 10 to 20, the risk is low; from 20 to 30, it is medium; from 30 to 40, it is high; and from 40 onwards, the risk becomes serious. Fabozzi et al. (2022) and Rzeźnik et al. (2022) state that Sustainalytics tends to give approximately equal weight to each of the three ESG pillars and is the best tool for measuring companies' ESG performance. Finally, the companies listed on the ESG 80

were taken from the Euronext website on December 31 of each year. The choice of the sample period is justified by the fact that the ESG 80 is an index that only appeared in June 2020.

3.2. Variables

In this work, we use stock returns as the dependent variable (Nguyen et al., 2019; Vieira et al., 2019). The literature suggests that macroeconomic and company-specific control variables should be included so that the analysis of ESG indicators is more accurate and comprehensive (Nguyen et al., 2019; Nadyayani & Suarjaya, 2021; Costa et al. 2024c). As for specific company indicators, we included size, liquidity, debt, profitability, and dividends. On the other hand, the real GDP growth rate and the inflation rate of the countries where the companies are listed on the stock exchange were introduced. Table 1 presents the variables used in the empirical part of this work.

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Table 1 Variables used

Variable	Acronym	Description	Calculation form	Expected influence	Authors who used
Dependent Variable	**R**	Stock Returns	$\ln \frac{P_t}{P_{t-1}}$ P is the year-end price of a stock		Tehrani and Tehrani (2015), Anwaar (2016), Din (2017), Muhammad and Ali (2018), Neves et al. (2018), Nurfadila (2020), Costa et al. (2021), Costa (2022b), Dinh (2023), Yadav et al. (2025)
ESG (Independent variables)	**ESG**	Sustainalytics ESG Rating	The Sustainalytics ESG Rating evaluates 150 main and sector-specific indicators, with an average of 80 indicators for each company (Fabozzi et al., 2022)	+/-	Boido et al. (2022), Berg et al. (2022b), Erhart (2022), Naffa and Fain (2022), Serafeim and Yoon (2023), Galema and Gerritsen (2025), Stewart (2025)
	ESG 80	Belongs to the ESG 80	1 = The company is part of the ESG 80; 0 otherwise	+/-	Dinh (2023), Costa et al. (2024b)
Control variables (Independent variables)	**Size**	Size	Ln (Total Assets)	+	Vieira et al. (2019), Costa (2022a), Costa et al. (2022b), Hussainey et al. (2025), Yadav et al. (2025)
	Liq	Liquidity	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$	+	Vieira et al. (2018), Costa et al. (2024a), Zeng and Gao (2025)
	Lev	Leverage	$\frac{\text{Total Liabilities}}{\text{Total Assets}}$	-	Adami et al. (2013), Santosa and Puspitasa (2019), Nguyen et al. (2019), Nadyayani and Suarjaya (2021)
	ROA	Return on Assets	$\frac{\text{EBIT}}{\text{Total Assets}}$	+	Husna and Satria (2019), Nguyen et al. (2019), Costa et al. (2024c), Costa et al. (2024d), Ribeiro and Costa (2024), Costa et al. (2025)
	Dps	Dividends per share	$\frac{\text{Cash Dividends Paid}}{\text{Number of shares issued}}$	+	Costa (2022b), Nur et al. (2023)
	Inf	Inflation rate of the company's country	Inflation rate of the company's country	-	Nguyen et al. (2019), Pericoli (2020), Costa et al. (2021), Yadav et al. (2025)
	GDP	Real GDP growth rate	The real growth rate of GDP of the company's country	+	Gan et al. (2006), Acikalin et al. (2008), Din (2017), Costa (2022a), Amaro and Costa (2023), Islam et al. (2023), Yadav et al. (2025)

3.3. Methodology

As in the study by Nafta and Fan (2022), the methodology will be simple panel data and GMM models. Wooldridge (2002) indicates that this methodology allows for quantitative analysis of economic relations, joining temporal (time series) and sectional (cross-section) data. Additionally, it is recommended to use the GMM methodology to strengthen the results, as it is a flexible, efficient technique that controls endogeneity (Jahmane & Gaies, 2020; Costa et al., 2024a; Yadav et al., 2025). Finally, to clarify all doubts regarding the ESG 80, we will use the quantile regression model.

$$R_{it} = \beta_0 + \beta_1 ESG_{it} + \beta_2 Size_{it} + \beta_3 Liq_{it} + \beta_4 Lev_{it} + \beta_5 ROA_{it} + \beta_6 Dps_{it} + \beta_7 Inf_{it} + \beta_8 GDP_{it} + \varepsilon_{i,t} \quad (1)$$

$$R_{it} = \beta_0 + \beta_1 ESG80_{it} + \beta_2 Size_{it} + \beta_3 Liq_{it} + \beta_4 Lev_{it} + \beta_5 ROA_{it} + \beta_6 Dps_{it} + \beta_7 Inf_{it} + \beta_8 GDP_{it} + \varepsilon_{i,t} \quad (2)$$

We used the panel data methodology to estimate the parameters of the coefficients of equations (1) and (2) and called them model 1 and model 3. Furthermore, we used the GMM methodology to calculate the coefficients of equations (1) and (2) to strengthen the results. We call it model 2 and 4. Finally, to clarify all doubts regarding the ESG 80, we will use the quantile regression model in model 5 taking advantage of the parameters of the coefficients from equation (2).

3.4.Descriptive statistics

Table 2 displays the descriptive statistics of the variables presented in the section on the variables used.

Table 2 Descriptive statistics

Variable	Mean	Median	Standard Deviation	Minimum	Maximum
R	-0.05	-0.01	0.63	-8.36	3.95
ESG 80	0.10	0.00	0.30	0.00	1.00
ESG	21.00	19.40	7.85	7.60	44.90
Size	7.15	7.15	2.40	1.05	12.60
Liq	3.09	1.38	21.20	0.31	510.00
Lev	0.61	0.61	0.24	0.00	2.01
ROA	0.40	0.04	7.79	-1.64	230.00
Dps	2.02	0.23	11.20	0.00	180.00
Inf	0.03	0.02	0.03	0.00	0.12
GDP	0.01	0.03	0.06	-0.08	0.07

Notes: The variables are defined in Table 1.

It is possible to verify that, on average, companies presented a negative return and an average ESG risk during the analyzed period. Liq is the indicator with the highest standard deviation. It is the variable with the greatest dispersion around the mean. In Table 3 below, the correlations between the empirical variables are presented.

Table 3 Correlation matrix

Variable	R	ESG	ESG 80	Size	Liq	Lev	ROA	Dps	Inf	GDP
R	1.00	0.08	0.00	0.05	0.02	-0.20	0.04	0.04	-0.14	0.02
ESG		1.00	-0.13	-0.10	-0.05	0.03	0.03	-0.06	-0.02	-0.01
ESG 80			1.00	0.36	-0.03	-0.01	0.00	-0.01	0.00	0.02
Size				1.00	-0.02	0.08	-0.09	0.06	0.05	0.03
Liq					1.00	-0.19	0.00	0.56	0.00	0.02
Lev						1.00	-0.02	-0.20	-0.04	-0.05
ROA							1.00	-0.01	-0.01	0.03
Dps								1.00	0.01	0.00
Inf									1.00	0.49
GDP										1.00

Notes: The variables are defined in Table 1.

The variables do not show a strong correlation, which leads us to conclude that there are no multicollinearity problems in the regressions (Wyderka & Ketterer, 2023). This was further reinforced with VIF (variance inflation factor) tests, which pointed in the same direction.

4. Empirical results

Table 4 presents the results of the regressions that analyze the impact of Sustainalytics' ESG rating on Euronext stock returns.

Table 4 The impact Sustainalytics' ESG rating has on Euronext stock returns

Dep. Var: R_{it}	Model 1 (OLS HAC)				Model 2 (Two-step system GMM)		
Euronext	**Coefficient**	**t-stat**	**p-value**		**Coefficient**	**z**	**p-value**
R_{it-1}					0.70	1.97	0.04**
ESG	0.00	1.88	0.06*		0.01	1.74	0.08*
Size	0.00	-0.20	0.84		0.07	0.08	0.93
Liq	0.01	0.20	0.85		-0.16	-0.88	0.38
Lev	-0.30	-2.43	0.012**		-0.09	-1.91	0.06*
ROA	0.01	2.62	0.00***		0.14	2.53	0.02**
Dps	0.01	1.75	0.08*		0.34	0.76	0.45
Inf	-3.21	-6.61	0.00***		-5.35	-3.44	0.00***
GDP	1.41	3.90	0.00***		3.60	1.44	0.09*
C	0.19	1.09	0.28				
Observations	499				344		
Adjusted R^2	0.10						
F-test (p-value)	1.89 (0.12)				-		
Hausman (p-value)	5.47 (0.18)				-		

Breusch-Pagan (LM Test)	2.91 (0.09)		-
Wooldridge (p-value)	18.71 (0.00)		-
Sargan (p-value)	-		12.45 (0,17)
Wald (p-value)	-		8.92 (0.00)
Hansen (p-value)	-		24.87 (0.21)

Note: The F, Hausman, Breusch-Pagan, White, and Wooldridge tests allowed us to conclude that the most suitable regression for Model 2.1 is an OLS with Newey-West (HAC) standard errors. Regarding model 2.2, it is important to mention that the Sargan test with a p-value greater than 5% shows that the instruments are valid; the Wald test has a p-value less than 5%, which means that there is evidence that the explanatory variables significantly influence the dependent variable. The Hansen test indicates that the instruments are valid, i.e., they are not correlated with the model errors, and the econometric model is valid. T statistics; *** significance level of 1%, ** significance level of 5%, * significance level of 10%.

The results obtained in models 1 and 2 suggest that Sustainalytics' ESG rating has a positive and statistically significant effect on Euronext stock returns. According to what is verifiable in the literature review of this work, the positive causality of ESG performance can be justified by several factors. The first is the fact that companies that prioritize ESG issues tend to be more proactive in risk management and, therefore, tend to have a greater capacity for resilience and adapting to changes in business patterns, consumption, legal, and climate change (Zaremba, 2023; Galema & Gerritsen, 2025). This result can also be explained by the stakeholder theory developed by Friedman (2007). This theory concludes that good ESG performance can lead to increased customer satisfaction/loyalty and improved working relationships, with a positive consequence on revenues and share returns (Aydogmuş et al., 2022; Kalia & Aggarwal, 2023).

Additionally, the positive impact of ESG performance on companies' share returns can be explained by the fact that some sustainable practices, such as reducing the consumption of natural resources, optimizing production processes, and more efficient use of energy, can lead to an improvement in the operational efficiency of companies, with a corresponding impact on reducing expenses and improving their returns (Halling et al., 2021). Finally, it is relevant to indicate that creditors already tend to positively

benefit (through reduced financing costs) companies with better ESG indicators, given their lower climate risk, with a consequent positive impact on share returns (Neitzert & Petras, 2022).

Leverage appears to have a negative and statistically significant effect on Euronext stock returns. These results align with the study by Costa et al. (2024b). The results also corroborate the study by Husna and Satria (2019) and suggest that companies with competent management use their assets more efficiently, with a consequent increase in their ROA and a positive impact on Euronext stock returns.

The inflation rate has a statistically significant negative effect on Euronext stock returns. This result is in line with that obtained by Pericoli (2020) and seems to indicate that an increase in the inflation rate leads to higher nominal interest rates and, therefore, a devaluation of the present value of expected cash flows. On the other hand, this study corroborates that of Islam et al. (2023) and suggests that the real GDP growth rate has a statistically positive effect on Euronext stock returns.

To test the second research hypothesis of this work, associated with the impact that belonging to the ESG 80 has on Euronext stock returns, we apply Model 3 and Model 4. The estimation results are presented in Table 5.

Table 5 The impact that belonging to the ESG 80 has on Euronext stock returns

Dep. Var: R_{it}	Model 3 (fixed effects HAC)				Model 4 (Two-step system GMM)		
Euronext	**Coefficient**	**t-stat**	**p value**		**Coefficient**	**z**	**p-value**
$\mathbf{R_{it-1}}$					0.09	0.62	**0.54**
ESG 80	-0.07	-1.13	0.26		-0.02	-0.21	**0.83**
Size	-0.03	-0.15	0.88		0.01	0.06	**0.96**
Liq	8.64	0.07	0.94		0.00	6.26	**0.31**
Lev	-0.14	-0.29	0.03**		-0.59	1.02	**0,00****
ROA	0.20	1.67	0.09*		0.05	1.50	**0.09***

Dps	0.00	1.99	0.04**		0.00	1.09	**0.27**
Inf	-4.11	-6.86	0.00***		-3.63	-4.46	**0.00*** **
GDP	1.46	4.46	0.00***		4.54	3.18	**0.0*** **
C	0.34	0.24	0.81				
Observations	905				**599**		
Adjusted R^2	0.09						
F-test (p-value)	4.72 (0.00)				-		
Hausman (p-value)	14.34 (0.00)				-		
Breusch-Pagan (LM Test)	3.74 (0.00)				-		
Wooldridge (p-value)	.85 (0.00)				-		
Sargan (p-value)	-				11.23 (0,14)		
Wald (p-value)	-				7.81 (0.00)		
Hansen (p-value)	-				19.14 (0.19)		

Note: The F, Hausman, Breusch-Pagan, and Wooldridge tests allowed us to conclude that the fixed effects model with standard errors is the most suitable type of regression for Model 2.3. Regarding model 2.4, it is important to mention that the Sargan test with a p-value greater than 5% shows that the instruments are valid; the Wald test has a p-value of less than 5%, which means that there is evidence that the explanatory variables significantly influence the dependent variable. The Hansen test indicates that the instruments are valid, that is, i.e., they are not correlated with the model errors, and the econometric model is valid. T statistics; *** significance level of 1%, ** significance level of 5%, * significance level of 10%.

The results from Models 3 and 4 suggest that the fact that stocks belong to the ESG 80 does not mean that they present a higher return than those that are not part of the index. The control variables' behavior is very similar to Models 1 and 2. Therefore, the quantile linear regression model (Fabozzi et al., 2022) was also applied to strengthen the information obtained and verify the consistency of the results obtained. The first decile, the median, and the ninth decile (q10, q50, q90) were estimated. Results are evidenced in Table 6.

Table 6 Quantile regression results

Dep. Var: R_{it}	Model 5 1st decile q10	Model 5 5th decile q50	Model 5 9th decile q90
ESG 80	-0.06	-0.05	-0.06
Size	0.05***	0.00	-0.04***
Liq	0.03	0.00	0.00
Lev	-0.86***	-0.33***	-0.18*
ROA	0.02	0.02*	0.04
Dps	0.01*	0.00	0.00
Inf	-4.06***	-3.51***	-4.53***
GDP	1.49***	1.82***	1.66***
C	-0.21	0.28***	0.97***
Observations	905	905	905
Pseudo R²	0,07	0,07	0,09

Note: Quantile linear regression using the bootstrapping method proposed by Efron (1992). T-stats; *** 1% significance level, ** 5% significance level, * 10% significance level. Source: own elaboration.

The results presented in Model 5 demonstrate that stocks that fall within the ESG 80 perform similarly to those that are not part of the index. These results align with studies by Dinh (2023) and Costa et al. (2024b) and reveal that the high expenses from the transition present energy risks and opportunities for the largest Euronext companies. While some companies can capitalize on new business opportunities and stand out by effectively using clean energy, others can face significant challenges in adapting their business models. Therefore, Hypothesis 1 is validated, and Hypothesis 2 is rejected.

This study demonstrates that investors must carefully and individually evaluate companies' ESG performance to achieve a profitable investment strategy. This is because even within the ESG 80, there may be variations in the companies' performance, with some companies having higher ESG scores than others within the index. Therefore, we suggest that Euronext seeks to include an individual ESG rating in the disclosure of stocks traded and controlled by it to assist investors in their decision-making.

5. Conclusion

Despite the increased interest in more sustainable assets in recent years, and especially during the COVID-19 crisis in 2020, the question of whether companies with better ESG ratings are likely to generate a better return for shareholders, or in other words if making investments with positive repercussions for society proves to be a good investment, continues to be an issue that deserves to be analyzed.

This study analyzed the impact of Sustainalytics' ESG rating and the ESG 80 index on Euronext stock returns. The results reveal a positive and statistically significant relationship between Sustainalytics' ESG rating and Euronext stock returns. Companies with more robust ESG practices tend to present better financial results, reflecting a greater resilience and ability to adapt to market demands. This result is in line with Friedman's stakeholder theory, which suggests that good ESG performance can lead to greater customer satisfaction and improvements in working relationships, resulting in positive impacts on stock returns. Furthermore, a negative impact of leverage and inflation on stock returns was observed, while ROA and real GDP growth had a positive effect, corroborating previous studies.

However, no significant relationship was found with stock returns when analyzing the impact of belonging to the ESG 80 index. This suggests that, although companies in the index may have more robust ESG practices, these do not necessarily translate into superior returns for investors. Therefore, this study highlights the importance of a careful assessment of companies' ESG performance for a profitable investment strategy. The variation in performance within the ESG 80 index highlights the need to consider the specificities of each company when making investment decisions. It is recommended that Euronext provides an individual ESG rating for each listed stock, assisting investors in this more detailed analysis.

This study has a limitation regarding the fact that it only analyzed 3 years of data. Because of this, and assuming that regulatory authorities and the financial system will tend to penalize companies that do not convert their business model towards sustainability, it will be important in the future to carry out a similar study with a larger sample to understand whether companies that belong to the ESG 80 continue to not have

a significant impact on Euronext stock returns. As for now, and considering data availability, only 3 years can be analyzed within the context.

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