Do European investors drive environmental performance?

An empirical analysis of ownership influence on environmental outcomes

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Abstract

This study seeks to understand the relationship between European investor ownership and corporate environmental performance, focusing on firms listed in the Stoxx 600 index from 2014 to 2022. The analysis finds a positive correlation between higher European ownership and improved environmental performance. An increase in European ownership is linked to an enhancement in the Environmental Pillar Score. These results support the hypothesis that European investors, through governance mechanisms and regulatory frameworks, drive firms toward more sustainable practices. The study also reveals that minority European ownership (less than 50%) has a more significant impact on environmental performance than majority ownership, which suggests a saturation effect in more significant ownership concentrations. Firm size and profitability further moderate the relationship, with smaller firms exhibiting a stronger association with European ownership and environmental performance. Temporal dynamics show that the influence of European ownership was significant before the COVID-19 pandemic but became statistically insignificant post-2020. These insights contribute to the growing body of research on the role of investor ownership and its origin in promoting corporate sustainability.

Keywords: European Investor Ownership; Corporate Environmental Performance; Environmental Pillar Score

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Resumo

Este estudo procura compreender a relação entre a participação dos investidores europeus e o desempenho ambiental das empresas, centrando-se nas empresas cotadas no índice Stoxx 600 de 2014 a 2022. A análise revela uma correlação positiva entre uma maior participação europeia e um melhor desempenho ambiental. Um aumento da participação europeia está associado a uma melhoria da pontuação do pilar ambiental. Estes resultados apoiam a hipótese de que os investidores europeus, através de mecanismos de governação e de quadros regulamentares, conduzem as empresas a práticas mais sustentáveis. O estudo revela igualmente que a participação europeia minoritária (menos de 50%) tem um impacto mais significativo no desempenho ambiental do que a participação maioritária, o que sugere um efeito de saturação em concentrações de participações maiores. A dimensão e a rendibilidade da empresa moderam ainda mais a relação, com as empresas mais pequenas a apresentarem uma associação mais forte entre a participação europeia e o desempenho ambiental. A dinâmica temporal mostra que a influência de investidores europeus era significativa antes da pandemia de COVID-19, mas tornou-se estatisticamente insignificante após 2020. Estas conclusões contribuem para o crescente corpo de investigação sobre o papel da participação dos investidores e a sua origem na promoção da sustentabilidade empresarial.

Palavras-chave: Participação dos Investidores Europeus; Desempenho Ambiental das Empresas; Pontuação do Pilar Ambiental

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Table of Contents

List of Tables

List of Abbreviations

DR – Debt Ratio

E - Score - Environmental Pillar Score

ESG - Environmental, Social, and Governance

Eur – European (percentage of European Ownership)

Ln(TA) - Natural Logarithm of Total Assets

Max - Maximum

Min – Minimum

N – Number of Observations

OLS – Ordinary Least Squares

P25 – 25th Percentile

P75 – 75th Percentile

ROA - Return on Assets

1 Introduction

The growing urgency of environmental challenges, including climate change, resource depletion, and biodiversity loss, has amplified the need for sustainable business practices across the globe. In response, ESG factors have become critical considerations for corporations, investors, and policymakers alike. Among these, corporate environmental performance has emerged as a key area of focus, reflecting the extent to which companies mitigate their environmental impacts and contribute to sustainability objectives. This evolution is particularly evident in Europe, where regulatory frameworks, such as the European Green Deal and the Corporate Sustainability Reporting Directive, have positioned the region as a global leader in promoting sustainable development through policy and market mechanisms.

Within this context, the role of investors, particularly European institutional investors, in influencing corporate environmental performance has garnered significant attention. Prior research highlights that investor pressure can serve as a catalyst for sustainable corporate practices, driven by increasing demand for accountability and transparency in environmental matters. Often bound by stringent regulatory requirements and proactive sustainability mandates, European investors are uniquely positioned to shape corporate behaviour. However, despite these advancements, critical questions remain regarding the extent and mechanisms through which the origin of investor ownership impacts corporate environmental outcomes.

This dissertation seeks to address this research gap by examining the relationship between European investor ownership and corporate environmental performance within the Stoxx 600 index during 2014–2022. By utilising the Environmental Pillar Score as a proxy for environmental performance, the study aims to uncover whether and how European investors positively influence corporate sustainability. Additionally, it considers the implications of regulatory developments and other external factors that may mediate or amplify this relationship.

The study contributes to the existing literature in several ways. First, it provides empirical evidence on the link between European investor ownership and environmental outcomes, offering insights into the role of capital markets in driving sustainability. Second, it incorporates temporal and firm size dynamics to account for changes in the environmental reporting landscape.

This dissertation underscores the critical interplay between financial systems and environmental accountability, positioning European investors as pivotal actors in the global sustainability transition. By exploring this relationship, the research not only contributes to

theoretical and empirical advancements but also addresses the pressing need for actionable strategies to promote sustainable corporate practices in an era of accelerating environmental challenges.

The research is organised as follows. The primary literature is presented and analysed in the next section. After that, the two main hypotheses are presented, followed by the data description. In this section, the selected sample, such as the variables used, are presented. The following section presents the methodology for the two hypotheses, followed by the respective empirical results. Afterwards, some robustness tests are run, all the key findings are summarised, and some limitations and possible further research are addressed. Finally, the conclusion of the research is presented.

2 Literature Review

This section reviews the existing literature on environmental awareness, the influence of investors on corporate governance, and the distinct role of European investors in promoting sustainability. It provides a foundation for understanding the relationship between investor origins and corporate environmental performance.

2.1 Environmental Awareness

Environmental awareness has grown significantly over the last two decades, driven by increasing recognition of climate change, resource depletion, and stakeholder expectations. The Paris Agreement (2015) marked a global turning point, as countries committed to reducing greenhouse gas emissions, further influencing businesses and investors (Gunningham, 2017). Firms that exhibit high environmental performance are seen as less risky, enjoy better reputational capital, and often experience enhanced financial performance (Clark et al., 2015) and beyond, stakeholders, including investors, now demand transparent environmental, social, and governance disclosures (KPMG, 2020).

(Kordsachia et al., 2022) indicate that sustainable institutional investors can play a significant role in enhancing the environmental performance of companies in which they invest, which shows that investors are no longer solely focused on financial metrics but are also evaluating firms based on their environmental and sustainability practices. Investors, particularly in Europe, often emphasise environmental issues as part of their fiduciary duties (Eurosif, 2018). This is partly due to regulatory pressures, including the EU Taxonomy for Sustainable Activities, which classifies environmentally sustainable investments.

Literature suggests that heightened environmental awareness has caused a shift in corporate strategies, with firms focusing more on sustainability-related innovations and governance mechanisms (Eccles et al., 2014). Furthermore, major institutional investors have formed global alliances, such as the Glasgow Financial Alliance for Net Zero (GFANZ) established during COP 26, to encourage the reduction of CO2 emissions through investment strategies focused on sustainability (Fan et al., 2024).

2.2 Investors' Effect on Corporate Governance

Investors can influence corporate environmental performance through engagement and proxy voting (Dyck et al., 2019). European investors, in particular, have been at the forefront of integrating ESG factors into investment strategies. These investors often demand stricter

environmental policies, better reporting mechanisms, and robust board oversight to ensure alignment with sustainability goals (Grewal et al., 2020).

Studies have shown that concentrated ownership by socially responsible investors leads to better environmental outcomes (Della Croce et al., 2011).

By (Gibson et al., 2020; Chen et al., 2020; Dyck et al., 2019), the increasing focus on Environmental, Social, and Governance factors has led investors to adopt new investment policies centred on sustainability.

Several studies highlight that institutional investors have become a critical corporate governance mechanism, influencing firms' non-financial performance (Dam & Scholtens, 2012; Dyck et al., 2019). Their role in corporate governance has increased due to their considerable ownership in the world's largest corporations (Shleifer & Vishny, 1997; Aghion et al., 2013).

Sustainable investors, often signatories of the United Nations Principles for Responsible Investment (PRI), demand more transparency regarding corporate sustainability and pressure management to improve sustainability performance (Kordsachia et al., 2022). These investors also have a stewardship function that encourages long-term investment strategies focused on sustainability (Klettner, 2021).

2.3 European Investors and Their Tendency to Be Greener

European investors are often perceived as pioneers in sustainable investment practices. This is attributed to robust regulatory frameworks, cultural factors, and the region's long-standing commitment to environmental issues (Eurosif, 2018). The EU's Sustainable Finance Disclosure Regulation and the Non-Financial Reporting Directive have encouraged investors to prioritise green investments. Empirical studies indicate that European investors are more likely than their counterparts from other regions to divest from high-carbon industries and reinvest in renewable energy and clean technology sectors (Friede et al., 2015).

Cultural values in Europe also play an important role. European societies tend to place higher importance on sustainability and environmental stewardship than other regions (Capelle-Blancard & Petit, 2019). This cultural inclination translates into investor preferences, as European funds often screen for ESG criteria more rigorously than their global peers (Dimson et al., 2015). Furthermore, European pension funds and sovereign wealth funds have increasingly adopted sustainability benchmarks, further influencing corporate Environmental strategies.

Recent research indicates that European institutional investors influence firms' environmental and social performance significantly. In contrast, investors from other regions, including the Americas, Asia, and Australasia, show no significant impact on companies' E&S performance. This suggests that European investors are more proactive in driving corporate social responsibility initiatives, whereas investors from other regions, including the US, have a negligible effect on firms' E&S activities (Dyck et al., 2019).

3. Research Hypothesis

This paper mainly tests the hypothesis related to the influence of European investors and ownership on the environmental performance of the companies studied. According to (Dyck et al., 2019), European investors are more proactive in driving corporate social responsibility initiatives. In contrast, investors from other regions, including the US, have a negligible effect on firms' E&S activities. So, Hypothesis 1 is defined to test if, in general, a higher European percentage in the ownership of a company means higher environmental performance. Furthermore, for a deeper analysis, Hypothesis 2 tests if companies controlled by Europeans (more than 50% ownership) show higher environmental performance.

To test the hypotheses, quantitative research was employed, which will be presented in Section 4. According to these hypotheses, Section 5 will present a regression-based analysis to test.

Hypothesis 1: "Firms with a higher proportion of European investors have higher environmental performance scores."

Hypothesis 2: "Majority European-owned firms have higher evidence of a positive relationship with environmental performance scores."

4. Data

The present section provides an overview of the data used in the study, including the sample selection process, definitions and descriptions of variables, and key statistical characteristics. It lays the groundwork for understanding the methodological approach and analysis conducted in subsequent sections.

4.1 Sample Selection

In the context of this research, environmental performances and data, it was decided to study European companies mainly due to the availability of environmental disclosure data. In that sense, the research will focus on Stoxx 600 companies. The Stoxx 600 was considered for this research due to its diverse representation of 600 large, mid, and small-cap companies across 17 European countries, offering a balanced industry mix and broad market coverage. Its relevance as a benchmark for investors ensures practical applicability. At the same time, Europe's strong focus on sustainability makes it a fitting context to study the link between investor origin and environmental performance.

Compustat was used to collect data about the constituents of Stoxx 600. The constituents list of Stoxx 600 from 10/2014 to 10/2022 was taken, and only the ones kept in the index during all these years were used.

Since this study aims to reveal whether European investors make companies "greener", it was considered that using more recent data would reflect current investment practices and environmental performance. Environmental reporting and ESG scoring began gaining significant traction around 2014-2015, especially in Europe. With the Paris Agreement (2015) and the EU's Action Plan on Sustainable Finance (2018), companies and investors alike have faced growing pressure to adopt greener practices. A start date around 2014 or 2015 would align the data with the timeline where such pressures became prominent.

Additionally, the EU introduced several sustainability-focused regulations after 2018, such as the EU Taxonomy Regulation and the Sustainable Finance Disclosure Regulation, which have heavily influenced corporate and investor behaviour. Also, including data from periods of economic instability (such as the COVID-19 pandemic starting in 2020) may add depth to the analysis, as it could show if investors deprioritise Environmental concerns during crises.

Therefore, it could be considered, for instance, the period 2014-2024. However, the data on the Environmental Pilar Score in 2024 is incomplete for almost all companies of the sample

(explained below), and there is a big group of companies that do not have the data about the E - Score in 2023, too. So, the final data range is 2014 to 2022, allowing the study of almost a decade (9 years) and including the main environmental events and the growth of environmental awareness.

All the variables considered were collected on an annual basis to facilitate further analysis. Accordingly, this study employs panel data, as it examines multiple firms over a period of time.

4.2 Variables

In this section, all variables are described in detail. The dependent variable E - Score will be the first, followed by the independent variable European. At the end, the group of control variables is also presented. All the values were taken from Refinitiv Workspace Datastream by a list of the ISIN codes of each company taken from Compustat, with a particularity: the percentage of European investors needed to be taken company by company from Refinitiv.

4.2.1 Dependent Variable

The environmental pillar score was used to measure each company's environmental performance. The E-Pillar Score directly captures a firm’s environmental performance, containing metrics such as carbon emissions, resource efficiency, and environmental innovation. Furthermore, its quantitative nature allows for consistent and objective comparisons across firms and industries, containing values from 0 to 100. In the case of this research, the values were converted to a 0 to 1 scale for better comprehension and comparability.

4.2.2 Independent Variable

To measure the percentage of European investors in each company as the independent variable, the proportion of a firm's shares held by investors based in European countries was taken into account. The independent variable, called European, contains values from 0 to 100 converted, in this case, to a 0 to 1 scale, such as the dependent variable. This variable serves as a proxy for understanding the influence of European investors on corporate environmental performance, as their investment behaviours are often shaped by stringent regional regulations, cultural values, and sustainability-focused mandates (Friede et al., 2015), as mentioned before.

4.2.3 Control Variables

This research incorporates control variables primarily associated with corporate environmental performance, as identified in prior literature. The first control variable is firm size, measured using the natural logarithm of total assets (Ln(TotalAssets)), with data sourced from Refinitive Workspace. Larger firms are often more likely to recognise environmental issues as a distinct managerial priority and to address them effectively, as suggested by previous studies (Al-Tuwaijri et al., 2004; Clarkson, Li, Richardson, & Vasvari, 2008; McKendall et al., 1999).

Profitability is another important factor influencing environmental performance, as financially successful firms are better equipped to bear the substantial costs associated with environmental compliance (McKendall et al., 1999; Kock & Santaló, 2005). To account for this, firm profitability is measured using return on assets (ROA), with data also obtained from Refinitive Workspace.

Leverage is controlled by using the Debt Ratio, calculated as the total debt divided by total assets. Prior research has demonstrated a positive relationship between debt levels and environmental disclosures, implying that firms with higher leverage may exhibit superior environmental performance (Clarkson et al., 2008).

Finally, Tobin's Q, defined as the firm’s enterprise value divided by the book value of total assets, serves as a market-based measure of financial performance (Nuber, Velte, & Hörisch, 2020). This metric captures a firm’s growth potential and valuation, both of which may influence investor behaviour and Environmental strategies. Higher Tobin’s Q values typically reflect better access to capital, facilitating more significant investments in sustainability initiatives. This aligns with evidence in the literature linking firm valuation to environmental performance strategies (Konar & Cohen, 2001).

Table 1 – Variables Description

This table provides an overview of the variables used in the analysis, including dependent, independent, and control variables. Each variable is categorised, labelled, and associated with its corresponding formula and method of extraction. All data are sourced from the Refinitive Workspace Datastream. Dependent and independent variables are directly extracted, while control variables are derived using specified formulas.

Category	Type	Variables	Formula	Source
Dependent	**E - Score**	**E - Score**	Extracted directly from the source	Refinitive Workspace Datastream
Independent	**European Investors %**	**European**	Extracted directly from the source	Refinitive Workspace Datastream
Control	**SIZE**	**Ln(Total Assets)**	Ln(Total Assets)	Refinitive Workspace Datastream
	Firm Performance	**ROA**	Extracted directly from the source	
	Capital Structure	**Debt Ratio**	Total Debt / Total Assets	
	Financial Performance	**Tobin's Q**	Enterprise Value / Total Assets	

4.3 Statistics

For the final data set, all the missing values were dropped, resulting in a final sample of 2716 observations. Appendix 1 presents the industry frequency for all the observations in the sample. Additionally, this is an imbalanced dataset due to the different numbers of observations in a few companies.

4.3.1 Sample Overview by Years

This section presents an overview of the evolution of the Environmental Score and ownership of different regions in the covered years.

Table 2 – Sample distribution by years

Table 2 presents the yearly average values of the Environmental Pillar Score (E - Score) and the percentual distribution of European, American, and Asian investors (columns 3, 4 and 5, respectively) in the sample companies from 2014 to 2022.

Year	E - Score	European	American	Asia
2014	66,9%	68,1%	28,1%	2,1%
2015	68,7%	67,6%	28,5%	2,1%
2016	69,0%	67,3%	29,0%	2,0%
2017	70,2%	65,7%	30,5%	2,2%
2018	70,5%	65,4%	30,7%	2,3%
2019	72,2%	64,9%	31,2%	2,2%
2020	72,6%	65,4%	30,7%	2,3%
2021	74,1%	64,5%	31,5%	2,4%
2022	74,2%	64,4%	31,4%	2,4%

As Table 2 shows, the Environmental Pillar Score (E - Score) steadily increased from 2014 to 2022, rising from 66.7% in 2014 to 74.2% in 2022. This upward trend reflects a general improvement in environmental performance across the companies in the sample without any abnormal improvement.

In terms of investor composition, the percentage of European investors remained consistently high throughout the period, hovering around 64% to 68%. The data suggests that European investors played a dominant role in these companies (which was expected due to the companies' origin), with slight declines in their proportion over the years. Meanwhile, the percentage of American investors gradually increased, reaching over 31% by 2022, indicating a growing influence of American investors. The decrease in the European Ownership of 3,7% aligns with the increase in the American (+ 3,3%), which could suggest a substitution effect that was not proven in this paper. Asian investors held a much smaller share. As expected, the increasing environmental performance and a relatively stable and strong European investor presence suggest a possible connection between European investor involvement and a growing focus on environmental issues.

4.3.2 Descriptive Statistics

In this section, to better describe the sample and the data collected, descriptive statistics of the variables will be presented in Table 3, such as a correlation matrix in Table 4 presenting the correlations between the variables.

Table 3 – Descriptive Statistics

This table summarises the descriptive statistics for the variables used in the analysis, including the Environmental Pillar Score, the proportion of European investors, and control variables such as the logarithm of total assets (LnTotalAssets), return on assets (ROA), Debt Ratio, and Tobin's Q. It includes sample size (N), measures of central tendency (mean, median), variability (standard deviation), and the range (minimum and maximum values), along with percentile values (p25, p75).

Variables	N	p25	Median	p75	Mean	SD	Min	Max
E - Score	2716	.606	0.747	.852	.71	.179	.156	.953
European	2716	.544	0.666	.795	.659	.169	.073	.995
LnTotalAssets	2716	15.870	16.947	18.164	17.084	1.658	11.017	22.136
ROA	2716	.024	0.053	.085	.065	.101	-.216	2.531
DebtRatio	2716	.155	0.254	.355	.261	.149	.000	.856
TobinsQ	2716	.637	1.005	1.633	1.447	2.611	-.198	63.546

Analysing the descriptive statistics in Table 3, the E - Score exhibits a mean of around 71% with considerable variation (SD = 17.93%), ranging from 16% to 95%. This variation highlights notable disparities in the environmental performance of the firms under study. The proportion of European investors has a mean of 65.9%, with values spanning from 7.3% to 99.5%. Regarding the control variables, the Natural Logarithm of Total Assets has a mean of 17, reflecting the large size of the firms in the sample, with values ranging from 11.02 to 22.14. ROA has an average of 6.5%, though the presence of substantial negative values (min = -21.6%) indicates significant financial volatility across firms. The Debt Ratio presents a mean of 26.1%. Lastly, Tobin’s Q exhibits a mean of 1.45 and substantial variability, indicating diverse market valuations among the companies in the sample.

Table 4 – Correlation Matrix

Table 4 presents the correlation matrix for the key variables in the analysis. The table displays correlation coefficients, with p-values provided in parentheses (*** p<0.01, ** p<0.05, * p<0.1). It includes the Environmental Pillar Score (E - Score), the proportion of European investors (European), logarithm of total assets (LnTotalAssets), return on assets (ROA), Debt Ratio, and Tobin's Q.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
(1) E - Score	1.000					
(2) European	-0.023	1.000				
	(0.226)					
(3) LnTotalAssets	0.460***	0.045**	1.000			
	(0.000)	(0.019)				
(4) ROA	-0.142***	0.032*	-0.332***	1.000		
	(0.000)	(0.099)	(0.000)			
(5) DebtRatio	0.040**	-0.009	-0.029	-0.101***	1.000	
	(0.040)	(0.653)	(0.137)	(0.000)		
(6) TobinsQ	-0.128***	0.024	-0.321***	0.849***	-0.037*	1.000
	(0.000)	(0.205)	(0.000)	(0.000)	(0.054)	

Table 4 displays the correlation matrix, which reveals a significant positive correlation between E-Score and Ln(Total Assets) of 0.46. This indicates that larger firms have better environmental performance, which aligns with prior literature. However, the E - Score is only weakly correlated with European (-0.023), presenting a value that is not significant, suggesting that the proportion of European investors may not have a strong linear relationship with environmental performance in the sample, though this might reflect a more complex underlying influence or potential mediation by other variables.

On the other hand, ROA unexpectedly shows a negative and significant correlation with Environmental performance (-0.142), suggesting that more profitable firms do not necessarily exhibit better environmental performance. Debt Ratio and Tobin's Q show weak but significant correlations with E-Score (0.04 and -0.13, respectively). Notably, Tobin's Q has a strong positive correlation with ROA (0.85), which can mean some collinearity problem, so taking this into account, a robust test will be executed in Section 7.4.

5. Methodology

This section outlines the regression models employed to test the hypotheses discussed in Section 3. The analyses were carried out using the statistical software "Stata". Additionally, panel data regressions were conducted in this study to account for variations both within firms and over time.

5.1 Relationship between E-Score and European Ownership

To examine the relationship between the percentage of European investors and environmental performance, the following fixed-effects regression model is estimated:

$$EScore_{it} = \beta_0 + \beta_1 Eur_{it} + \beta_2 Ln(TA)_{it} + \beta_3 ROA_{it} + \beta_4 DR_{it} + \beta_5 TobinsQ_{it} + \gamma_i + \delta_t + \epsilon_{it} \quad (1)$$

The model contains the dependent variable, Environmental Pillar Score (EScore), the independent variable, Eur (% of European Investors) and the control variables, including logarithm of Total Assets (Ln(TA)), ROA, Debt Ratio (DR), and Tobin's Q, which account for firm size, profitability, leverage, and market valuation, respectively as explained in the Section 4.2.3. The model incorporates firm fixed effects γ_i and time-fixed effects δ_t , the error term is denoted by ϵ_{it}.

5.2 Relationship between high % of European investors and E - Score

To test Hypothesis 2, the independent variable From_50% was generated. For this, the sample was divided into two groups, one with values of European ownership from 50% (From_50%) and the other with values below 50%. For this, a condition was created for the variable European by using just the observations with values equal or above 50%. Following that, the variable European uses another name just for the model (From_50%), taking just into account the observations in which variable European presents these values. This approach allows for testing whether companies with a dominant European investor base demonstrate distinct environmental outcomes compared to those with a more diversified or non-European majority investor base.

$$EScore_{it} = \beta_0 + \beta_1 From\_50\%_{it} + \beta_2 Ln(TA)_{it} + \beta_3 ROA_{it} + \beta_4 DR_{it} + \beta_5 TobinsQ_{it} + \gamma_i + \delta_t + \epsilon_{it} \quad (2)$$

Using firm fixed effects is crucial in this context as it accounts for unobserved heterogeneity across firms that could affect both their environmental performance and the percentage of European investors. Firms may differ significantly in terms of their inherent

environmental policies, organisational culture, or industry, which could bias this relationship, so this control ensures that the analysis focuses on the variation within firms over time rather than across firms. In addition, year-fixed effects are necessary to control for time-specific factors that could influence the entire sample, such as economic fluctuations, regulatory changes, or shifts in global sustainability standards. The period from 2014 to 2022, which includes significant events referred to in Section 2, may have led to widespread changes in corporate environmental practices, regardless of the specific characteristics of individual firms. By including year-fixed effects, it is possible to isolate the effect of European investor composition on environmental performance from broader external trends.

The subsequent section presents the empirical results derived from these regression models, offering insights into the observed patterns.

6. Empirical Results

This section presents the empirical analysis of the relationship between European ownership and environmental performance, measured by the Environmental Pillar Score. Regression results from two models are discussed: one without control variables and one with controls, examining the influence of European ownership levels and the dominance of European investors on firms' E - Scores.

6.1 Relationship between E - Score and European Ownership

In this section, the results of the first Equation (1) are presented in order to prove or not Hypothesis 1.

Table 5 – Equation (1) Regression Results

Table 5 presents regression results examining the relationship between European ownership and environmental performance, measured by the Environmental Pillar Score. The table includes two models: Model (1) without control variables and Model (2) with control variables: LnTotalAssets, ROA, Debt Ratio and Tobin's Q. The coefficients for the independent variable and controls and significance levels (denoted by ***, **, and *) are reported. Due to signals of heteroskedasticity, robust standard errors were used in these results (represented in parenthesis). Both models include firm and time-fixed effects. The table also reports the number of observations in the sample, as well as R-squared values for each model.

	(1)	(2)
VARIABLES	E - Score	E - Score
European	0.047	0.066*
	(0.040)	(0.039)
LnTotalAssets		0.055***
		(0.011)
ROA		-0.102**
		(0.043)
DebtRatio		-0.093*
		(0.054)
TobinsQ		-0.000
		(0.003)
Constant	0.625***	-0.283
	(0.028)	(0.190)
Observations	2,716	2,716
R-squared	0.169	0.194
Time fixed Effect	Yes	Yes
Firm fixed effects	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

In both models, European Ownership exhibits a positive association with E - Score, although the statistical significance varies. In Model (1), the coefficient for European is 0.047 but is not statistically significant, while in Model (2), the coefficient increases to 0.066 and

achieves marginal significance at the 10% level. These results suggest that a higher proportion of European investors may contribute to improved environmental performance (an increase of 1% of European ownership can result in an increase of around 0.07% in E - Score), supporting the hypothesis that firms with a higher proportion of European investors have higher environmental performance scores.

The control variables in Model (2) reveal expected patterns consistent with prior literature. LnTotalAssets shows a highly significant positive association with E - Score, confirming that larger firms tend to have better environmental performance and suggesting that an increase of 1 unit in the logarithm of total assets can result in an increase of 0.05% in E - Score. Conversely, ROA and DebtRatio exhibit significant negative associations with E - Score, suggesting that profitability and leverage may hinder environmental performance. These findings align with the literature indicating that firms under financial pressure or focused on short-term profitability may deprioritise environmental investments. The coefficient for Tobin's Q is negative but statistically insignificant.

The R-squared values, increasing from 0.169 in Model (1) to 0.194 in Model (2), suggest that the addition of control variables improves the model's explanatory power. Despite this improvement, the relatively low R-squared values indicate that a substantial portion of the variation in E - Score remains unexplained, highlighting the complexity of factors influencing corporate environmental performance.

6.2 Relationship between high % of European investors and E - Score

To test the influence of the dominance of European investors in a company in their environmental performance, Table 6 shows this relationship using the variable From_50% that takes into account the companies with European ownership of at least 50%. Table 6 presents a model without the control variables (Model (1)) and with control variables (Model (2)).

Table 6 – Equation (2) Regression Results

Table 6 presents regression results examining the relationship between the dominance of European investors, defined as companies with at least 50% European ownership (From_50%), and environmental performance, measured by the Environmental Pillar Score. The table includes two models: Model (1) without control variables and Model (2) with control variables: LnTotalAssets, ROA, Debt Ratio and Tobin's Q. The coefficients for the independent variable and controls and significance levels (denoted by ***, **, and *) are reported. Due to signals of heteroskedasticity, robust standard errors were used in these results (represented in parenthesis). Both models include firm and time-fixed effects. The table also provides the number of observations and the R-squared values for each model.

	(1)	(2)
VARIABLES	E - Score	E - Score
From_50%	0.039	0.061
	(0.054)	(0.052)
LnTotalAssets		0.056***
		(0.011)
ROA		-0.116**
		(0.046)
DebtRatio		-0.117*
		(0.060)
TobinsQ		-0.001
		(0.003)
Constant	0.625***	-0.288
	(0.041)	(0.202)
Observations	2,256	2,256
R-squared	0.181	0.210
Time fixed Effect	Yes	Yes
Firm fixed effects	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results of Table 6 reveal that for firms with 50% or more European ownership, the coefficient for European investors is positive but not statistically significant. This lack of significance could suggest that beyond a certain ownership threshold, the marginal influence of European investors decreases, as environmental practices may already be well-integrated into corporate strategies. Regarding the significance of the control variables' coefficients, it practically remains the same as using the model of Equation 1. The increase in R-squared from 0.181 to 0.210 in Model (2) highlights improved explanatory power with the inclusion of controls.

7. Robustness Tests

To ensure the validity and reliability of the main findings, a series of robustness tests were conducted to address potential limitations and further assess the strength of the observed relationships. These tests include analysing the impact of different European investor compositions on environmental performance in Section 7.1, analysing different periods of time in Section 7.2, and also analysing different firm sizes in Section 7.3, as well as addressing concerns about multicollinearity in Section 7.4 and testing lagged independent variable Section 7.5. Finally, there is a comparison test between the ownership from different regions in Section 7.6. By employing these complementary approaches, this section aims to confirm the consistency of the results and provide additional insights into the contextual factors influencing the relationship between investor composition and environmental outcomes.

7.1 High and low % of European investors and E - Score

To complement the results of Hypothesis 2, Table 7 compares the companies with 50% or more European investors (already presented in Table 6) to those with less than 50%. In this regard, the variable Below_50% will be used in the model (1). To create this model, the process is the same for the creation of From_50%: a new variable substitutes the variable European, just taking into account the observations in which European presents values below 0.50. In this way, the sample is split, taking just into account the observations with European values lower than 0.50, and the name of the independent variable is changed for better comprehension. This approach allows for testing whether companies with a dominant European investor base demonstrate distinct environmental outcomes compared to those with a more diversified or non-European majority investor base.

Table 7 – Regression Results of the relationship between European ownership lower than 50% and from 50% and E - Score

Table 7 presents the regression results examining the relationship between European ownership and environmental performance, distinguishing between companies with less than 50% European ownership (Below_50%) and those with at least 50% European ownership (From_50%). Model (1) focuses on firms with less than 50% European ownership, while Model (2) examines firms with 50% or more European ownership. The table includes coefficients for the independent variables, control variables, significance levels (denoted by ***, **, and *), and fixed effects for time and firms. Due to signals of heteroskedasticity, robust standard errors were used in these results (represented in parenthesis). It also provides the number of observations, R-squared values, and constant terms.

	(1)	(2)
VARIABLES	E - Score	E - Score
Below_50%	0.187*	
	(0.100)	
From_50%		0.061
		(0.052)
LnTotalAssets	0.081*	0.056***
	(0.046)	(0.012)
ROA	0.023	-0.116**
	(0.105)	(0.046)
DebtRatio	0.024	-0.117*
	(0.110)	(0.060)
TobinsQ	0.001	-0.001
	(0.012)	(0.003)
Constant	-0.797	-0.288
	(0.783)	(0.202)
Observations	460	2,256
R-squared	0.134	0.210
Time fixed Effect	Yes	Yes
Firm fixed effects	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results of Table 7 reveal that for firms with less than 50% European investor ownership, the coefficient on the percentage of European investors is positive and significant at the 10% level with a value of 0.187, which means that in companies with a minority European ownership, an increase in 1% of this ownership increases the E - Score by 0.19%. This suggests that even minority European investor participation can drive improved environmental performance, potentially through active engagement or influence on corporate governance. Despite that, model 1 shows a lower explanation of the independent variable shown in the R squared values, which is also visible in the loss of significance in the control variables. These results reveal to be less powerful, also observable in the number of observations in Model 1.

7.2 Splitting before and from 2020

Some shocks may influence how investors choose companies to invest in and how they want the companies to proceed. That said, to investigate whether the COVID-19 pandemic influenced the relationship between European investor composition and environmental performance, the sample was split into two groups: one from 2014 to 2020 (1) and the other from 2020 (included) to 2022 (2). Given the unprecedented disruptions caused by the pandemic, it explores whether these events altered the dynamics between investors' and firms' environmental commitments.

Table 8 – Regression Results of Equation 1 divided by years before 2020 and from 2020

Table 8 explores the potential impact of the COVID-19 pandemic on the relationship between European ownership and environmental performance. It divides the sample into two periods: before 2020 (Model 1) and from 2020 onwards (Model 2). The table includes coefficients for the independent variables, control variables, significance levels (denoted by ***, **, and *), and fixed effects for time and firms. Due to signals of heteroskedasticity, robust standard errors were used in these results (represented in parenthesis). It also provides the number of observations, R-squared values, and constant terms.

VARIABLES	Before 2020 (1) E - Score	From 2020 (2) E - Score
European	0.057*	0.087
	(0.030)	(0.056)
LnTotalAssets	0.047***	0.020
	(0.010)	(0.015)
ROA	-0.058	-0.019
	(0.045)	(0.036)
DebtRatio	-0.069*	-0.041
	(0.036)	(0.052)
TobinsQ	0.007	-0.002
	(0.005)	(0.002)
Constant	-0.152	0.343
	(0.169)	(0.268)
Observations	1,800	916
R-squared	0.148	0.039
Time fixed Effect	Yes	Yes
Firm fixed effects	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As shown in Table 8, before 2020, the coefficient for European is positive and significant. On the other hand, with the COVID effect, the coefficient remains positive but loses significance. Additionally, the same happens with LnTotalAssets. The lower R-squared in the second model (0.039 vs. 0.148) further suggests that the pandemic introduced additional, unaccounted factors influencing environmental performance. This could be changes in

priorities from firms' governance, focus on operations, or even new short-term regulations that needed a specific investment.

7.3 Splitting Smaller and Bigger Companies

As was already referred to before, the size of the companies may influence their capacity to invest and focus on environmental policies and practices. In that sense, the distinction between smaller and bigger companies was made by splitting the data set into two groups by dividing the variable that accounts for size in Equation 1, which is the logarithm of total assets. So, in Table 9, model (1) uses the values below or equal to the median of this control variable (16.95), and model (2) uses values above this median. The variable names "Smaller" and "Bigger" are just names for better comprehension, meaning the same as LN(Total Assets) but representing the observations with values below its median and above, respectively.

Table 9 – Regression Results of Equation 1 for Smaller and Bigger Firms

Table 9 examines how firm size moderates the relationship between European ownership and environmental performance by splitting the sample into two groups based on the logarithm of total assets. Model (1) focuses on firms classified as smaller (below or equal to the median size), while Model (2) focuses on larger firms (above the median size). The table includes coefficients for the independent variables, control variables, significance levels (denoted by ***, **, and *), and fixed effects for time and firms. Due to signals of heteroskedasticity, robust standard errors were used in these results (represented in parenthesis). It also provides the number of observations, R-squared values, and constant terms.

	(1)	(2)
VARIABLES	E - Score	E - Score
European	0.062*	0.040
	(0.035)	(0.037)
Smaller	0.040***	
	(0.013)	
Bigger		0.061***
		(0.012)
ROA	-0.077*	-0.135***
	(0.043)	(0.049)
DebtRatio	-0.090**	-0.127***
	(0.040)	(0.043)
TobinsQ	-0.002	0.004
	(0.003)	(0.007)
Constant	-0.049	-0.373*
	(0.210)	(0.226)
Observations	1,358	1,358
R-squared	0.230	0.139
Time fixed Effect	Yes	Yes
Firm fixed effects	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Among smaller firms, the coefficient for European % remains positive and significant at a 10% level. For larger firms, the coefficient for the independent variable remains positive. However, it loses significance, possibly indicating that such firms already face higher institutional and market pressures for sustainability, reducing the relative impact of European investors. The more substantial significance and higher magnitude of the constant term for larger firms further highlight the importance of size-related dynamics in shaping environmental outcomes. These results suggest that investor influence may be more pronounced in contexts where internal resources and external pressures are less robust, such as in smaller firms.

7.4 Multicollinearity Test

As was shown in Section 4.3.2, there is evidence of possible multicollinearity mainly caused by the variable TobinsQ. In that sense, a multicollinearity test was created, removing this variable and checking the model's results. The main difference in the results is that the significance of ROA and LnTotalAssets increases slightly. The significance of the independent variable explaining the positive variation of the E - Score is kept, as can be seen in Table 10.

Table 10 – Multicollinearity Test

Table 10 displays the regression results after removing the variable Tobin's Q to address potential multicollinearity. The table includes coefficients for the independent variables, control variables, significance levels (denoted by ***, **, and *), and fixed effects for time and firms. Due to signals of heteroskedasticity, robust standard errors were used in these results (represented in parenthesis). It also provides the number of observations, R-squared values, and constant terms.

	(1)
VARIABLES	E - Score
European	0.067*
	(0.039)
LnTotalAssets	0.055***
	(0.011)
ROA	-0.104**
	(0.048)
DebtRatio	-0.094*
	(0.054)
Constant	-0.285
	(0.186)
Observations	2,716
R-squared	0.194
Time fixed Effect	Yes
Firm fixed effects	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

7.5 Lagged Independent Variable

Lagging the percentage of European investors accounts for potential temporal dynamics in the relationship between investor composition and environmental performance. This approach recognises that the influence of European investors on a firm's environmental practices and reporting is unlikely to be immediate, as organisational and policy adjustments require time to materialise. Additionally, lagged variables help mitigate concerns about reverse causality, where firms with higher E - Scores may attract more European investors in the same period. This method addresses simultaneity bias and potential endogeneity issues by ensuring that the percentage of European investors is temporally prior to the observed E - Score. Furthermore, this method allows us to distinguish the direct effects of investor composition from other time-dependent factors influencing E - Scores.

Table 11 – Lagged Independent Variable

Table 11 displays the regression results when the percentage of European investors lagged to account for potential temporal dynamics. The table includes coefficients for the independent variables, control variables, significance levels (denoted by ***, **, and *), and fixed effects for time and firms. Due to signals of heteroskedasticity, robust standard errors were used in these results (represented in parenthesis). It also provides the number of observations, R-squared values, and constant terms.

VARIABLES	(1) E - Score
European	0.038
	(0.039)
LnTotalAssets	0.050***
	(0.011)
ROA	-0.078*
	(0.045)
DebtRatio	-0.078
	(0.057)
TobinsQ	0.000
	(0.003)
Constant	-0.164
	(0.188)
Observations	2,360
R-squared	0.162
Time fixed Effect	Yes
Firm fixed effects	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As shown in Table 11, the coefficient of the independent variable is positive (0.038). However, it loses statistical significance, suggesting that the delayed influence of European investors on environmental performance, while theoretically plausible, is not strongly supported in this dataset. This lack of significance may indicate that the effect of European investors, if present, is either immediate or diluted over time, potentially due to the gradual nature of corporate responses to investor pressures.

7.6 Investors Origin

To compare the influence of the origin of investors in the E – Score values, an additional analysis was conducted to compare the influence of European investors with that of investors from other regions, specifically American and Asian investors. The results of this analysis are presented in Table 12.

The results in Column (1) are the same as the ones in Table 5 and are just presented for easier comparison, and as already referred, they present a positive and significant influence of European ownership on Environmental Pillar Score.

In contrast, the coefficients for American and Asian investors are negative at -0.043 and -0.109, respectively. However, these coefficients are not statistically significant, suggesting that any potential influence of American and Asian investors on environmental scores is not robustly measurable in this analysis. While the negative signs may hint at a less favourable impact on environmental performance compared to European investors, the lack of statistical significance precludes definitive conclusions.

The control variables present similar conclusions and results in both models, without big differences in terms of significance and values of coefficients, which was already expected. The models demonstrate reasonable explanatory power, with R-squared values of approximately 0.19.

Table 12 – Investors' Origin and its influence on E - Score

This table presents the results of a regression analysis examining the relationship between investor regional origin and environmental scores (E-Scores). Column (1) includes the coefficient for European investors, Column (2) includes the coefficient for American investors, and Column (3) includes the coefficient for Asian investors. The table also includes coefficients for control variables, significance levels (denoted by ***, **, and *), and fixed effects for time and firms. Due to signals of heteroskedasticity, robust standard errors were used in these results (represented in parenthesis) It also provides the number of observations, R-squared values, and constant terms.

	(1)	(2)	(3)
VARIABLES	E - Score	E - Score	E - Score
European	0.066*		
	(0.039)		
American		-0.043	
		(0.042)	
Asia			-0.109
			(0.202)
LnTotalAssets	0.055***	0.054***	0.054***
	(0.011)	(0.011)	(0.011)
ROA	-0.102**	-0.100**	-0.099**
	(0.043)	(0.044)	(0.044)
DebtRatio	-0.093*	-0.093*	-0.091*
	(0.054)	(0.054)	(0.054)
TobinsQ	-0.000	-0.000	-0.000
	(0.003)	(0.003)	(0.003)
Constant	-0.283	-0.216	-0.224
	(0.190)	(0.184)	(0.189)
Observations	2,716	2,716	2,716
R-squared	0.194	0.192	0.192
Time fixed Effect	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

8. Key Findings and Discussion

This section presents the findings of the study in the context of existing literature and evaluates their alignment with the proposed hypotheses. In that sense, the Table 13 summarizes the results of Hypothesis 1 and 2 (row 1 and 3), such as the results for the robustness tests run.

Table 13 – Empirical Conclusions of Coefficients

Table 13 summarises the empirical results for Hypotheses 1 and 2. It compares the coefficients of the independent variables (European ownership, Below 50%, and From 50%) under different model specifications. The table presents the results for both the OLS model and the OLS model with a lagged independent variable. The dependent variable is the Environmental Pillar Score (E - Score).

Dependent Variable	Independent	OLS	OLS with Lagged Independent variable
E - Score	European	Positive and Significant	Not Significant
E - Score	Below_50%	Positive and Significant	Not Applicable
	From_50%	Not Significant	Not Applicable
E - Score	European (Before 2020)	Positive and Significant	Not Applicable
	European (From 2020)	Not Significant	Not applicable

8.1 Relationship Between European Ownership and Environmental Performance

As shown in Table 5, the results confirm Hypothesis 1, which posits that companies with a higher proportion of European investors exhibit better environmental performance. The analysis reveals that a 1% increase in European ownership correlates with an approximate 0.07% improvement in the Environmental Pillar Score. This finding aligns with (Dyck et al., 2019), who asserts that European investors proactively drive environmental improvements in firms through targeted governance and engagement. Similarly, (Friede et al., 2015) emphasise the pivotal role of European investors in championing sustainable practices bolstered by stringent regulatory frameworks such as the EU Taxonomy and the Sustainable Finance Disclosure Regulation.

Control variables reinforce these insights. Firm size (measured as the natural logarithm of total assets) positively and significantly influences environmental performance, consistent with (Clarkson et al., 2008) and (Al-Tuwaijri et al., 2004), who argue that larger firms are better positioned to address sustainability challenges. However, profitability (ROA) and leverage (Debt Ratio) negatively impact E - Scores. The ROA result could be due to some profit and financial constraints during the chosen range of years that can have led to these unexpected results. The negative impact of the debt ratio can suggest that financial constraints limit the ability to invest in green initiatives, which is in line with (McKendall et al., 1999).

8.2 Threshold Analysis: Majority European Ownership

Regarding Hypothesis 2, which tests whether companies with majority European ownership (more than 50%) achieve superior environmental performance, the results indicate a positive but statistically insignificant relationship. This suggests a potential saturation effect where high ownership levels do not necessarily amplify environmental impacts. These findings are consistent with previous studies, such as those by (Dam and Scholtens, 2012), which argue that investor influence is not solely determined by ownership concentration but also by active governance mechanisms.

Interestingly, minority European ownership (less than 50%) significantly enhances environmental performance. This aligns with (Kordsachia et al., 2022), who suggest that diverse investor bases, including minority European investors, can effectively drive environmental governance through active stewardship.

8.3 Temporal and Firm Size Dynamics

The study also reveals temporal dynamics, with European ownership significantly influencing environmental performance pre-Covid ($\beta = 0.057$, $p < 0.10$) but becoming statistically insignificant post-Covid (from 2020). This shift may reflect external disruptions, such as the COVID-19 pandemic, which reprioritised corporate strategies. These findings resonate with (Gunningham, 2017) and (KPMG, 2020), who highlight the evolving nature of sustainability pressures amid global crises.

On the other hand, firm size moderates the relationship between European ownership and environmental performance, with smaller firms showing a more substantial positive association. Smaller firms may rely more heavily on external pressures to adopt sustainability practices, as supported by (Barber et al., 2021) and (Dyck et al., 2019).

8.4 Further Robustness Checks

Robustness checks validate these findings, addressing concerns about multicollinearity and simultaneity bias. For instance, excluding Tobin's Q increased the significance of other variables without altering the main results, while lagged variables indicate that European ownership exerts an immediate rather than delayed influence on E - Score. Furthermore, comparing the influence of three important regions (Europe, America and Asia) on E – Score, just Europe is presented as a region from where the investors have the capacity to improve the Environmental performance of companies, measured by Environmental Pillar Score.

9. Limitations and Further Research

While this study provides valuable insights into the influence of European investor ownership on corporate environmental performance, several limitations must be acknowledged. These limitations contextualise the findings and highlight opportunities for future research to deepen and broaden understanding in this field.

The geographical focus on European firms listed in the Stoxx 600 index offers a robust dataset, reflecting a diverse range of industries within Europe. However, this regional concentration restricts the generalizability of the results to companies outside of Europe. Consequently, the extent to which these findings apply to firms in other global markets, such as those in the United States or emerging economies, remains unclear. Expanding the analysis to include non-European markets could provide comparative insights and uncover potential regional variations in the relationship between investor ownership and environmental performance.

Furthermore, although the use of panel data and fixed effects regressions mitigates endogeneity concerns, this methodology does not establish definitive causal relationships. For instance, the possibility of reverse causality—where firms with superior environmental performance attract greater investment from European investors—cannot be entirely ruled out. Employing advanced econometric techniques, such as instrumental variable (IV) approaches or natural experiments, would provide a more robust framework for inferring causality in future studies.

Another limitation relates to the proxy used to measure environmental performance. The Environmental Pillar Score, while comprehensive, may not fully encapsulate all dimensions of corporate environmental practices, particularly those qualitative aspects that are harder to quantify, such as corporate culture or long-term sustainability commitments. Future research could incorporate additional metrics, such as alignment with Science-Based Targets or progress toward carbon neutrality, to provide a more nuanced understanding of corporate environmental initiatives.

Moreover, this study's temporal scope, spanning from 2014 to 2022, corresponds to a period marked by increased regulatory attention and heightened awareness of sustainability issues. Nevertheless, the ongoing evolution of the regulatory landscape—such as the introduction of the European Union’s Corporate Sustainability Reporting Directive (CSRD)—is likely to influence corporate behaviour and investor priorities over time. Extending the

analysis to subsequent years would help capture the dynamic nature of these changes and their implications for investor-corporate relationships.

In addition, while the study incorporates various control variables, including firm size, profitability, and leverage, it is possible that other unobserved factors could influence the observed relationships. Variables such as industry-specific characteristics, board composition, or corporate lobbying efforts might affect environmental performance and could be considered in future analyses to enhance explanatory power.

Another important consideration is the potential heterogeneity within the category of European investors. By aggregating these investors as a single group, the analysis may overlook variations in investment strategies among different types of investors, such as pension funds, private equity, or sovereign wealth funds, as well as differences between investors from distinct European countries. Future research could explore these nuances to provide a more granular understanding of how specific investor groups impact environmental performance.

Finally, the dynamic nature of ESG reporting standards across regions and firms introduces potential inconsistencies in measuring the Environmental Pillar Score. As global efforts to standardize ESG reporting progress, future research could benefit from more consistent and comparable datasets, thereby improving the reliability and validity of the results.

In conclusion, while this study shows an important aspect of the relationship between investor ownership and environmental performance, addressing the outlined limitations through expanded datasets, refined methodologies, and comparative analyses would yield deeper insights. These efforts would significantly contribute to the ongoing discourse on sustainable investing and corporate governance, furthering understanding of how financial stakeholders can drive environmental accountability.

10. Conclusion

This research has provided a detailed analysis of the influence of European investor ownership on corporate environmental performance, contributing to the broader discourse on sustainable finance and corporate accountability. By examining a robust dataset of Stoxx 600 companies over the period 2014–2022, it has been established that European investors play a pivotal role in driving corporate environmental performance, as evidenced by a positive correlation between their ownership and the Environmental Pillar Score. These findings underscore the importance of investor pressure in encouraging firms to adopt more sustainable practices, particularly in response to the evolving regulatory and market environments that increasingly prioritise Environmental stewardship.

The findings highlight critical implications for policymakers, investors, and corporations. They suggest that investor-driven sustainability initiatives, especially those originating from European institutions, hold significant potential for fostering environmental accountability in the corporate sector. Simultaneously, they call attention to the need for standardised and transparent ESG metrics, which could enhance the reliability and comparability of corporate sustainability data.

Considering these findings, future research should extend the analysis to other regions and timeframes, explore causality with advanced econometric approaches, and investigate heterogeneous effects among different types of investors and firms. Such endeavours would address the identified limitations and deepen our understanding of how financial markets can drive global sustainability goals.

In conclusion, this study reaffirms the critical role of European investors in shaping corporate environmental behaviour, offering valuable insights for stakeholders seeking to align financial systems with the imperatives of Environmental Sustainability. The findings highlight that European ownership can significantly improve environmental outcomes, showcasing the effectiveness of a diverse investor base in steering corporate governance toward sustainability. This insight is vital for the investment community, emphasising the need for integrating European-style responsible investment principles to achieve meaningful environmental progress. For companies, the study reveals the strategic importance of aligning with European investors' sustainability expectations. Firms that attract European investment are better positioned to meet global sustainability standards and enhance their competitive edge in markets increasingly driven by environmental, social, and governance criteria. By actively collaborating with environmentally conscious investors, companies can secure financial

support for green initiatives and strengthen their market reputation, thereby fostering resilience and long-term growth in a world where environmental accountability is rapidly becoming a central determinant of corporate success.

Future research can further elucidate the dynamic interplay between investment practices and sustainable corporate development in an increasingly interconnected world by addressing the limitations and building on its findings.

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12. Appendix

Appendix 1 – Industry Frequency

Industry Name	Count of Company Industry
Office of Manufacturing	225
Commercial Banks	164
Industrial Applications and Services	151
Office of Trade & Services	127
Telephone Communications	113
Office of Technology	104
Life Insurance	103
Drugs	98
Electric Services	95
Office of Real Estate & Construction	92
Miscellaneous Investing	81
Beverages	70
Office of Energy & Transportation	69
Fire, Marine, And Casualty Insurance	66
Surgical, Medical, And Dental Instruments And Supplies	63
Motor Vehicles And Motor Vehicle Equipment	56
Petroleum Refining	54
Services Allied With The Exchange Of Securities	37
Computer Programming, Data Processing, And Other Computer Related Services	36
Aircraft And Parts	34
Gas Production And Distribution	33
Office of Finance	32
Industrial Conglomerates	31
Steel Works, Blast Furnaces, And Rolling And Finishing Mills	27
Grocery Stores	27
Soap, Detergents, And Cleaning Preparations, Perfumes, Cosmetics, and Other Toilet Preparations"	27
General Industrial Machinery And Equipment	27
Search, Detection, Navigation, Guidance, Aeronautical, and Nautical Systems, Instruments, and Equipment	27
Water Supply	27
Air Transportation, Scheduled, And Air Courier	26
Personnel Supply Services	25
Lumber And Other Building Materials Dealers	18
Electronic Components And Accessories	18
Real Estate Operators (except Developers) And Lessors	18
Laboratory Apparatus And Analytical, Optical, Measuring, and Controlling Instruments	18
Hotels And Motels	18
Airports, Flying Fields, And Airport Terminal	18
Radio And Television Broadcasting Stations	18
Cement, Hydraulic	18
Eating And Drinking Places	18

Paper Mills	18
Miscellaneous General Merchandise Stores	18
Communications Equipment	18
Jewelry, Silverware, And Plated Ware	18
Petroleum And Petroleum Products	18
Advertising	18
Cigarettes	17
Miscellaneous Business Services	17
Special Industry Machinery, Except Metalworking	13
Surety Insurance	9
Rubber And Plastics Footwear	9
Trucking And Courier Services, Except Air	9
Ophthalmic Goods	9
Operative Builders	9
Crude Petroleum And Natural Gas	9
Paints, Varnishes, Lacquers, Enamels, And Allied	9
Deep Sea Foreign Transportation Of Freight	9
Arrangement Of Transportation Of Freight And Cargo	9
Cable And Other Pay Television Services	9
Periodical	9
Multi-Sector Holdings	9
Business Credit Institutions	9
Family Clothing Stores	9
Electric Transmission And Distribution Equipment	9
Farm And Garden Machinery And Equipment	9
Household Appliances	9
Legal Services	9
Motion Picture Production And Allied Services	9
Tires And Inner Tubes	9
Electrical Goods	9
Watches, Clocks, Clockwork Operated Devices, and Parts	9
Research, Development, And Testing Services	9
Rolling, Drawing, And Extruding Of Nonferrous	9
Miscellaneous Chemical Products	9
Women's Clothing Stores	7
Misc Fabricated Metal Prods	7
Office of Finance or Office of Crypto Assets	6
Household Audio And Video Equipment, And Audio	5
Railroad Equipment	2
Grand Total	**2716**