Lisbon School of Economics & Management
Universidade de Lisboa

MASTER

ACCOUNTING

MASTER´S FINAL WORK

DISSERTATION

IMPACT OF ESG ON FIRM PERFORMANCE – EVIDENCE FROM EUROPE

FILIPE ALEXANDRE DE JESUS AMBRÓSIO

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SUPERVISION:
MARIA JOÃO COELHO GUEDES

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"In the future, climate and ESG considerations will likely be at the heart of mainstream investing. Investors will tailor their investments and fulfill their fiduciary duties through better quality and more widely available data on sustainability and performance, and more informed judgments of strategic resilience."

Former Governor of the Bank of England, Mark Carney, 2021

GLOSSARY

EBIT – Earnings Before Interest and Taxes.

ESG – Environmental, Social, and Governance.

GDP – Gross Domestic Product.

OECD – Organisation for Economic Co-operation and Development

OLS – Ordinary Least Squares

ROA – Return on Assets.

ROS – Return on Sales.

ABSTRACT

This study examines the relationship between Environmental, Social, and Governance (ESG) ratings, as well as the overall ESG rating and firm performance. Using a sample of public European firms over the period of 2012 to 2020, we investigate the extent to which ESG ratings are associated with firm financial performance, measured by the return on sales (ROS).

The results indicate that firms with higher ESG scores tend to have better financial performance. The result is robust when disaggregating by environmental, social, and governance individual ratings, but presenting different magnitudes.

While we found that environmental and social factors are positively associated with firm performance, governance factors also show a positive relationship but are slightly weaker than the other two.

This study provides evidence for the ever-growing importance of ESG in firm performance and the reason investment decisions should be prioritized based on ESG ratings.

KEYWORDS: ESG; Firm Performance; Return on Sales.

RESUMO

Este estudo examina a relação entre as classificações de Environmental, Social e Governance (ESG), bem como a classificação geral de ESG e o desempenho das empresas. Usando uma amostra de empresas públicas europeias no período de 2012 a 2020, investigamos até que ponto as classificações de ESG estão associadas ao desempenho financeiro das empresas, medido pelo retorno sobre as vendas (ROS).

Os resultados indicam que empresas com pontuações mais altas de ESG tendem a ter um melhor desempenho financeiro. O resultado é robusto quando desagregamos as classificações individuais de Environmental, Social e Governance, embora apresentem magnitudes diferentes.

Os resultados apontam para que os pilares Environmental e Social estejam positivamente associados ao desempenho das empresas, enquanto que o pilar de Governance também mostram uma relação positiva, mas são ligeiramente mais fracos do que os outros dois.

Este estudo fornece evidências para a crescente importância do ESG no desempenho das empresas e a razão pela qual as decisões de investimento devem ser priorizadas com base nas classificações de ESG.

PALAVRAS-CHAVE: ESG; Desempenho das empresas; Retorno sobre as vendas.

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ACKNOWLEDGMENTS

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IMPACT OF ESG ON FIRM PERFORMANCE – EVIDENCE FROM EUROPE

1. INTRODUCTION

Environmental, Social, and Governance (ESG) factors are increasingly being recognized as important indicators of a firm's performance (Wu et al., 2022). ESG refers to the three main areas of concern that investors and other stakeholders use to evaluate a firm's sustainability and societal impact (OECD, 2020).

The environmental component focuses on a firm's impact on the planet, such as its ecological footprint and waste management (Hitt et al., 2016), while similarly measuring a firm’s management of climate-related risks and opportunities, and the commitment to implement a decarbonization pathway (OECD, 2022).

The social component considers the firm's impact on society, including its relationships with employees, customers, and suppliers, as well as its involvement in the communities where it operates (Shayan et al., 2022).

Finally, the governance component refers to the firm's management structure and practices, including its board of directors, executive compensation, and accountability to shareholders (OECD, 2020).

ESG ratings are becoming progressively more important for investors to consider when making investment decisions. ESG investing involves considering a firm's environmental and social impact, as well as the quality of its corporate governance, alongside financial performance when evaluating investment opportunities (Park & Jang, 2021).

There are several reasons why ESG has become important in the investment community. First, investors are increasingly aware of the impact that firms have on

society and the environment, and they want to invest in firms that are doing good while generating financial returns. Second, firms that perform well on ESG metrics are often better managed and more sustainable over the long term, which can lead to better financial performance (OCDE, 2020).

Stakeholders, including shareholders, investors, governments, and regulatory agencies, have demonstrated a heightened interest in ESG issues (Hill et al., 2007; Escrig-Olmedo et al., 2013).

The COVID-19 pandemic has further fueled this trend, with global investors increasingly recognizing and focusing on sustainable investing and ESG considerations (Hwang et al., 2021).

The relationship between a firm's ESG performance and its financial performance has been the subject of much research in recent years and its popularity has skyrocketed in the past years (Eccles & Serafeim, 2013).

However, the evidence is mixed, with some studies showing a positive relationship (Friede et al., 2015; Orlitzky et al., 2003), others a negative relationship (Ruan & Liu, 2021) while other studies show no relationship (Huang, 2021) between ESG and firm performance.

A greater part of the studies focuses on a single dimension of ESG such as environmental or social disclosure (Ponnu et al., 2008; Barnett, 2011; Han et al., 2016).

However, it is also important to study the relationship of all pillars individually and not only focus on the ESG total rating since ESG disclosure issues are interconnected. Therefore, considering only one dimension could provide insufficient evidence (Hassani & Bahini, 2022).

In recent studies, all the 3 pillars are studied (Qureshi et al., 2021; Almeyda & Darmansyah, 2019; Alareeni & Hamdan, 2020; Ruan & Liu, 2021), showing a mixture of results. While Qureshi et al. (2021), Almeyda & Darmansyah, (2019) and Alareeni & Hamdan (2020) studies show a positive relationship between ESG and firm performance, Ruan & Liu, (2021) shows a negative relationship between ESG and firm performance.

It is important to study the relationship between ESG and performance, taking into account the mixed results. Overall, the relationship between ESG performance and financial performance is complex and depends on a variety of factors, including the industry, the region, and the specific ESG factors being evaluated (Ghasemzadeh & Seyedhosseini, 2020).

The present study examines how the ESG rating and the environmental, social, and governance pillars' ratings interact with firm financial performance, considering Return on Sales as the financial performance indicator.

The empirical evidence presented in this study sheds light on the relationship between ESG and firm performance, using a European sample. This contribution to the existing literature is significant, as previous studies have often focused on a single country or a limited number of countries. Additionally, by examining all three pillars of ESG, this study also adds to the body of research in this area.

The study is organized into five chapters. Chapter 1 is the Introduction and Chapter 2 presents the literature review. Chapter 3 explains the sample and the methodology used in the study, and chapter 4 explains the results of the study, providing evidence for the discussion. Finally, chapter 5 provides the conclusions of this study, whilst also explaining the limitations and considerations for future research.

2. LITERATURE REVIEW

2.1. ESG definition and its relevance

Environmental, Social, and Governance (ESG) importance has increased over the last years for questions that involve investing, operational, and purchasing decisions (OECD, 2020). ESG disclosure provides investors with a deeper insight into the nonfinancial aspects that influence corporate performance (Pulino et al., 2022).

Firms that predominantly incorporate ESG activities into their strategy make commercial opportunities out of global, social, environmental, and governance problems, thus creating a pleasing work environment (Chang and Lee, 2022).

This is the reason ESG has gained popularity over the last few years among socially and environmentally sensible organizations. Stakeholders believe that firms with higher ESG disclosures yield better operating performance, higher returns, and lower firm-specific risk (Shaikh, 2021).

Furthermore, it allows more transparency as the disclosure of ESG suggests that the firm's strengths and weaknesses may be identified quicker, as it allows a broader view of the firm, other than the one-dimensional methods purely based on a firm's financial performance (Kocmanová et al., 2016).

ESG has three components. The first letter of ESG refers to Environmental criteria, which involves a firm's use of energy, the waste it discharges, and the pollution it creates, as well as the consequences to flora and fauna (OECD, 2020). It also encompasses carbon emissions and climate change, as every firm uses energy and resources, basically looking at how a firm impacts the environment and how it tries to preserve the planet that we live in (Dobers, 2009).

The criteria can also help in evaluating any environmental risks a firm might face and how the firm is managing those risks. For instance, a firm might face problems related to eventual ownership of contaminated land, its disposal of hazardous waste, the way they handle toxic emissions, and its fulfillment of government environmental regulations (Hamilton, 2003).

The second letter refers to Social criteria and addresses the relationship between a firm's employees and how the firm is perceived by its customers. It includes labor relations and diversity inclusion. These metrics vary from employee race, ethnicity, gender, and health condition to the way the employees are managed and the culture of the firm (OECD, 2020).

Clients could be tempted to purchase regularly from a firm that holds the same values as theirs. Customers might also evaluate a firm's work conditions and whether they show respect towards their employees' health, safety, and general well-being or even if the firm engages in socially responsible causes, which might range from donating a percentage of their profits to charity to encouraging employees to perform volunteer work for charity purposes (Sen et al., 2001; Mohr et al., 2001).

The last letter is for Governance and focuses on the internal practices, controls, and processes that a firm adopts to make efficient decisions and comply with the law, whilst meeting the needs of its stakeholders (OECD, 2020).

Governance criteria include not only ethics and laws but also the ownership structure (Akdogan & Boyacioglu, 2014). Investors prioritize firms that use clear accounting methods, that are not on the receiving end of bad decision-making processes, and that do not engage in illegal practices such as schemes and fraud (Graham et al., 2005).

They may also want assurances that firms avoid conflicts of interest in the choice of board members and do not use political influences to obtain unjustifiably favorable treatment from the government (OECD, 2020).

Fueled by the enhanced social, governmental, and consumer attention on the broader impact of corporations, as well as by the investors and executives who realize that a strong ESG proposition can safeguard a firm's long-term success, meaning ESG has become pivotal to firms (Oncioiu et al., 2020).

Firms are under increasing pressure to "do good" and "look good" to conduct themselves for more than financial gain. Nonetheless, despite years of academic interest, there are still significant disparities in understanding how ESGs are perceived and whether the ESGs have an impact on a firm's financial performance (Huang, 2021).

However, the rationale behind ESG activities is not noticeable on a firm's financial disclosure, as their benefits and expenses do not appear in profit and loss statements. Nonetheless, it may impact a firm's performance and value more than it was originally believed to (Pasquini-Descomps & Sahut, 2013).

To that end, ESG ratings provide a way for companies to engage with stakeholders on sustainability issues, including investors, customers, employees, and communities. By improving their ESG performance, companies can build trust and enhance their reputation with these stakeholders (Morgan Stanley, 2019).

Overall, ESG ratings are important because they provide a standardized and objective way to assess a firm's performance on environmental, social, and governance issues, which can help investors and other stakeholders make informed decisions about where to invest their resources (Park & Jang, 2021).

2.2. Corporate Governance and ESG

Corporate governance refers to the system of rules, practices, and processes by which a firm is directed and controlled. It involves balancing the interests of a firm's many stakeholders, such as shareholders, management, customers, suppliers, financiers, government, and the community (OECD, 2015).

Effective corporate governance is essential for the long-term success of a firm and includes the establishment of clear accountability and responsibility for decision-making, transparency in financial reporting, and adherence to ethical business practices (Hitt et al., 2016).

Corporate governance and ESG are closely related because a firm's governance structure can impact its ability to manage ESG risks and opportunities effectively. Good corporate governance practices can help a firm identify and manage ESG risks, establish appropriate policies and procedures, and ensure that the firm is successful (Liao & Hsu, 2013).

Previous research has investigated how corporate governance may promote the adoption of environmental strategies (Calza et al., 2016). In line with recent changes, empirical studies moved their interest to environmental, social, and governance activities undertaken by firms.

Through the incorporation of ESG factors, value-added metric enables the identification of a firm's strengths and weaknesses, offering a more comprehensive understanding of its performance than traditional one-dimensional methods based solely on economic performance (Kocmanová et al., 2016).

For this information to reach all stakeholders, firms produce the sustainability report. This is a tool that the investors have access to, to understand whether a firm holds the same values as their own, which might influence the decisions of these same investors when it comes to devoting their funds to the firm (Rahi et al., 2022).

Hence, the sustainability report must contain useful and truthful information, that shall not be biased by the managers, otherwise, this will create an agency problem. Sometimes managers feel pressured to obtain good financial results, which might affect the way they report their ESG activities to the general public (Dobers, P., 2009).

Therefore, the established relationship between Corporate Governance and ESGs is that both aim for the same goal, i.e., more transparency not only in the reporting of Environmental, Social, and Governance measures but also in the management of a firm (Mccarthy, 2021).

2.3. ESG and firm performance

A growing number of firms are now engaged in a wide range of ESG disclosure activities, as this important issue has become a topic of much attention in recent years. However, the fundamental question firms and shareholders must answer is whether ESG disclosure practices can be turned into performance (Carp et al., 2019).

According to past studies, the evidence is inconclusive. Studies have shown that firms with higher ESG ratings have better financial performances and reduced corporate financing costs, therefore giving rise to better performance (Alareeni & Hamdan, 2020; Shaikh, 2021; Friede et al., 2015).

Other studies reached the opposite conclusions, showing that ESGs are not directly related to firm performance, or they influence the performance of the firms in a negative way (Ruan & Liu, 2021; Chen et al., 2021; Almeyda & Darmansyah, 2019).

The mixed results may be driven by several reasons. One possible explanation is the way firms measure performance, which could be either by using accounting-based measures or market-based measures (Ma et al., 2018; Bonaparte et al., 2014). Another possibility is that some studies only focus on a single dimension of ESG (Han et al., 2016) whereas others focus on all of them (Sharma & Thukral, 2015; Tarmuji et al., 2016; Ting et al., 2020).

This mixed evidence could be due to the usage of different performance measures such as Return on Assets (Pulino et al., 2022; Almeyda & Darmansyah, 2019), Return on Equity (Ting et al., 2020), or Tobins Q (Ruan & Liu, 2021; Wu et al., 2022).

Other studies such as Shaikh (2021) and Alareeni & Hamdan (2020) even go as far as using all of the three aforementioned variables as firm performance indicators.

With that being said, it is important to study the impact of every pillar of Environmental, Social, and Governance with their given score and understand how it impacts firms' financial performances.

It is also important to establish that prior research indicates that Western countries such as the G7 countries (Almeyda & Darmansyah, 2019), which includes Japan, the United States of America (Qureshi et al., 2021; Alareeni & Hamdan, 2020), and Switzerland (Pasquini-Descomps & Sahut, 2013) majorly show a positive relationship between ESG and firm performance.

However, studies conducted in Eastern countries like South Korea (Hwang et al., 2021), China (Ruan & Liu, 2021; Chen et al., 2021), Turkey (Saygili et al., 2022), and India (Sharma & Thukral, 2015) show mixed results.

In China, the two aforementioned studies have different outcomes, Ruan & Liu (2021) concludes that there is a negative relationship between ESG and firm performance, whilst Chen et al. (2021) proves a positive relationship between ESG and firm performance.

The studies conducted in Turkey (Saygili et al., 2022) and India (Sharma & Thukral, 2015) show a negative relationship between ESG, the environmental and governance pillar, and firm financial performance.

The study from South Korea (Hwang et al., 2021) concludes a positive relationship between ESG and firm performance. These findings may be due to the intrinsic societal background of each country, with the United States of America, South Korea and most European countries having higher human development index ratings than China, Turkey, and India (UNDP, 2022).

2.4. Research Hypothesis

Despite the mixed evidence presented, the purpose of the present study will be to study a positive relationship between ESG and performance.

Even though the studies show mixed evidence, when considering European countries, or studies that use G7 which includes European countries, the vast majority of them show that ESG and its pillars are positively related to firm performance, and this is the reason the hypotheses for this study are as follows:

Hypothesis 1: *ESG rating is positively related to firm performance.*

Hypothesis 1a: *Environmental pillar rating is positively related to firm performance.*

Hypothesis 1b: *Social pillar rating is positively related to firm performance.*

Hypothesis 1c: *Governance pillar rating is positively related to firm performance.*

3. SAMPLE AND METHODOLOGY

3.1. Sample selection and data source

The study sample is comprised of public listed European firms during the period from 2012 to 2020. All the data was collected from the Thomson Reuters database, and the World Development Indicators data bank, for country-specific variables.

For a country to be available to study, we decided that they had to have at least 10 observations.

Also, every observation that had no values in one or more variables, or that had strange values for one variable had to be cut in order not to skew the final results. Examples of this are very high or extremely negative values for financial leverage and return on sales.

Given the aforementioned process, we ended up with 6181-year observations from 1445 firms. Half of these observations come from three of the biggest countries in Europe, with 27.52% coming from the United Kingdom, 12.05% from France, and 10.79% from Germany, as shown subsequently in Table I.

Countries like Switzerland and Sweden reached close to the 7% and 9% marks respectively, while none of the other countries surpassed 4%. It is also worth noticing that Cyprus, Hungary, Luxembourg, and Portugal did not reach the 1% mark.

In terms of the number of firms from each country, the ones that have the most observations also have the greatest number of firms. The United Kingdom leads the list with 337 firms studied, followed by Sweden with 176, Germany with 165, and France with 140.

TABLE I - DESCRIPTION OF OBSERVATIONS PER COUNTRY

Country	N	N Percentage	Number of firms
Austria	109	1.76	28
Belgium	180	2.91	38
Cyprus	19	0.31	8
Denmark	184	2.98	42
Finland	239	3.87	62
France	745	12.05	140
Germany	667	10.79	165
Hungary	24	0.39	3
Ireland	147	2.38	30
Italy	213	3.45	69
Luxembourg	59	0.95	21
The Netherlands	247	4.00	50
Norway	195	3.15	56
Poland	114	1.84	26
Portugal	48	0.78	12
Russia	115	1.86	29
Spain	200	3.24	54
Sweden	546	8.83	176
Switzerland	429	6.94	99
United Kingdom	1701	27.52	337
Total	6181	100.00	1445

3.2. Variable definition

Table II displays the variables used in the study and details the variables' abbreviations which will be used for the rest of the study.

The dependent variable of this study is Return on Sales (ROS). ROS is a ratio used to evaluate a firm's financial performance, as it provides insight into how much profit is being produced per sale. An increasing ROS indicates that a firm is improving its performance, whilst a decreasing ROS signifies imminent financial concerns. Return on Sales is calculated by dividing the operating profit by the total net sales of a firm, where operating profit is calculated as the Earnings Before Interest and Taxes (EBIT).

This variable was used in previous studies by Yu & Zheng (2020) and Astara et al. (2017). Most of the research uses Return on Assets, Return on Equity, or Tobin's Q (Khan, 2019; Alareeni & Hamdan, 2020) and so, using another firm performance variable such as Return on Sales could also give us a meaningful result with a variable that is not used as often.

The independent variables of this study are the ESG ratings and the individual ratings for the Environmental, Social, and Governance pillars – all of which are collected from Thomson Reuters, ranging from a zero to 100 score, as used previously in Barros et al., (2022) study.

The ESG score is an overall score based on self-reported information in the environmental, social, and governance pillars. Thomson Reuters defines all three pillars, and what each pillar measures when rating firms.

The environmental pillar score measures a firm's impact on living and abiotic systems, including the air, land, and water, as well as complete ecosystems. It reflects how well a firm uses best management practices to avoid environmental risks and capitalize on environmental opportunities to generate long-term shareholder value.

The social pillar measures a firm's capacity to generate trust and loyalty with its workforce, customers, and society, through its use of best management practices. It reflects the firm's reputation and the health of its license to operate, which are key factors in determining its ability to generate long-term shareholder value.

Lastly, the corporate governance pillar measures a firm's systems and processes, which ensure that its board members and executives act in the best interests of its long-term shareholders. It reflects a firm's capacity, through its use of best management

practices, to direct and control its rights and responsibilities through the creation of incentives, as well as checks and balances to generate long-term shareholder value.

Then, the remaining control variables are either corporate-related, concern the board, or are country-specific.

Thomson Reuters also gives the definition of the control variables used in this study. Board size is used in Kassinis & Vafeas, (2002), Rao et al., (2012), and Walls et al., (2012), and it measures the total number of board members at the end of the fiscal year. Board gender diversity (Li et al., 2017), is the percentage of females on the board, and board skills (Orlitzky et al. 2015) is given by the percentage of board members who have either an industry-specific background or a strong financial background. Finally, board member compensation used in Walls et al. (2012) is given by the total compensation of the board members in US dollars. These were the corporate governance variables chosen, given that they are the most related to good governance.

Since this study is based on firms, we employ the number of employees as a control variable, which encompasses both part-time and full-time employees. This variable was previously utilized in Kocmanová et al. (2016).

Financial leverage is the use of borrowed funds or debt to finance operations or investments of a given firm. It is the degree to which a firm uses debt to finance its assets. This was used as a control variable in studies like Khoury et al. (2021) and Zhou et al., (2022) because it can affect a firm's financial performance and risk. By controlling financial leverage, we can isolate the effect of other variables on a firm's financial performance or risk, improving the accuracy and reliability of findings.

Then, as this study is based on European countries, some control variables have to be country specific. For this purpose, the study uses GDP per capita, as used in Zhou et al., (2022), and inflation, as explained in Table II.

GDP per capita is a measure of the economic output of a country calculated by the total value of a country's goods and services produced within one year divided by the total population of the country. Inflation is a sustained increase in the general price level of goods and services in a given economy over one year.

Both GDP per capita and Inflation were retrieved from World Development Indicators for the nine complete years between 2012 and 2020, including the latter.

TABLE II - DEFINITION AND CLASSIFICATION OF VARIABLES

Classification	Variable Name	Abbreviation	Definition
Dependent Variable	Return on Sales	ROS	Operating Profit / Net Sales
Independent Variables	ESG	ESG	ESG rating from Thomson Reuters
	Environmental Pillar	Env	Environmental rating from Thomson Reuters
	Social Pillar	Social	Social rating from Thomson Reuters
	Governance Pillar	Gov	Governance rating from Thomson Reuters
Control Variables	Board Size	BSize	Number of board members
	Board Gender Diversity	BGDiv	Percentage of females on board
	Board Specific Skills	BSkills	Board background skills for the position
	Board Member Compensation	BMComp	Value of the compensation to board members
	Number of Employees	NoEmp	Number of employees in the firm
	Financial Leverage	FinLev	Total liabilities / Total assets
	GDP per Capita	GDP	The total output of the country / Total population
	Inflation Rate	Inflation	Increase in the price of G&S over a period of time

3.3. Methodology

The methodology used in this study consists of four regression models, using the Ordinary Least Squares (OLS) technique for estimating coefficients of linear regression equations. This technique is used in previous studies like Shaikh, (2021), Ting et al., (2020), and Hwang et al., (2021).

The model used is the same for the four regressions, only the independent variable changes similarly to what was done in Shaikh, (2021) study. Model 1 is the primary base of the study, so ESG ratings will be used as the independent variable. Then ESG total rating is swapped for Environmental in Model 1.1, Social in Model 1.2, and Governance in Model 1.3 as the independent variables, keeping the control variables, meaning only the ratings for ESG, and its pillars can change the outcome of the result.

(1) $$ROS_{i,t} = \beta_0 + \beta_1 ESG_i + \beta_2 BSize_i + \beta_3 BGDiv_i + \beta_4 BSkill_i + \beta_5 BMComp_i + \beta_6 NoEmp_i + \beta_7 FinLev_i + \beta_8 GDP_i + \beta_9 Inflation_i + \varepsilon_i$$

(1.1) $$ROS_{i,t} = \beta_0 + \beta_1 Env_i + \beta_2 BSize_i + \beta_3 BGDiv_i + \beta_4 BSkill_i + \beta_5 BMComp_i + \beta_6 NoEmp_i + \beta_7 FinLev_i + \beta_8 GDP_i + \beta_9 Inflation_i + \varepsilon_i$$

(1.2) $$ROS_{i,t} = \beta_0 + \beta_1 Social_i + \beta_2 BSize_i + \beta_3 BGDiv_i + \beta_4 BSkill_i + \beta_5 BMComp_i + \beta_6 NoEmp_i + \beta_7 FinLev_i + \beta_8 GDP_i + \beta_9 Inflation_i + \varepsilon_i$$

(1.3) $$ROS_{i,t} = \beta_0 + \beta_1 Gov_i + \beta_2 BSize_i + \beta_3 BGDiv_i + \beta_4 BSkill_i + \beta_5 BMComp_i + \beta_6 NoEmp_i + \beta_7 FinLev_i + \beta_8 GDP_i + \beta_9 Inflation_i + \varepsilon_i$$

4. Results and Analysis

4.1. Descriptive statistics analysis

Below, in Table III, it is shown the descriptive statistical results of each variable.

Table III - Descriptive Statistics Analysis

Variable	N	Mean	Std. Dev.	Min.	Max.
ROS	6181	0.16	0.30	-9.99	8.54
ESG	6181	58.76	17.33	8.10	95.25
Env	6181	56.35	23.85	0.00	99.22
Social	6181	62.29	20.44	5.95	98.20
Gov	6181	55.44	21.28	0.46	98.55
BSize	6181	10.24	3.64	1	28
BGDiv	6181	26.46	13.44	0	75.00
BSkills	6181	39.94	22.04	0	100.00
BMComp	6181	1,900,317	16,100,000	0	831,000,000
Ln_NoEmp	6181	9.06	1.89	1.61	13.42
FinLev	6181	0.60	0.22	0.00	3.33
Ln_GDP	6181	10.67	0.41	7.66	11.59
Inflation	6181	0.01	0.01	-0.02	0.49

The mean value for our dependent variable, Return on Sales, was 0.16. The variable Return on Sales (ROS) refers to a financial ratio that measures a company's profitability by dividing its net income by its total revenue. A mean of 0.16 for this variable indicates that, on average, the company is earning a profit equal to 16 % of its total revenue.

In other words, for every dollar of sales revenue generated, the company is earning an average profit of $0.16. This measure is often used to evaluate a company's financial health and performance, as it provides insight into how effectively the company is managing its costs and generating profits.

However, it is important to note that a mean of 0.16 only tells us about the average profitability of the company. It does not provide information on the distribution of profits

or the factors that may be influencing the profitability of the company. Additional analysis and context are needed to fully understand the implications of this measure.

As for the ESG ratings, the mean for all the variables used in the study was 58.76. This is the value that incorporates all three pillars and as such, the minimum value is 8.1 and the maximum value is 95.25.

This happens because even when one firm is not doing well in one or two pillars, it might compensate with other pillars. The same can be said for the fact that no firm has more than a 95.25 rating.

There might be the case that a firm is doing well in all three pillars at the same time, but another hypothesis lies in the fact that one specific pillar weighs down the other two.

This can be concluded because individual pillars have minimums and maximums that range from 0 to 99.22.

The environmental pillar has a mean rating of 56.35. This rating value for the environmental pillar suggests that the average firm still has room for improvement in terms of its environmental impact. However, there are firms that largely embrace environmental problems and contribute in a favorable way to solve them, as the maximum rating for all observations in this pillar is 99.22.

Likewise, there are firms to which environmental problems are clearly not their priority with this pillar having ratings as low as a straight zero.

The same problem seems to appear in the governance pillar. The mean is 55.44, which is the lowest of all the three pillars, and even the ESG rating. This implies that the area of corporate governance is the one that needs the most improvement out of all pillars.

Values for this pillar range from 0.46 at its minimum and 98.55 at its maximum. The same concept from the environmental pillar applies here.

A low score in the governance pillar might give evidence of a poorly managed firm, with inadequate structures and mechanisms, less respect for democracy, human rights, inclusiveness, and a higher likelihood of engaging in fraudulent activities.

When the environmental pillar has a high score, it means that rules are applied, there is a sense of protecting human rights in the work field, and there is justice and equality of outcomes.

Finally, the social pillar presents the highest score out of all the three pillars and the ESG total rating, with the average rating being 62.29. This could be due to the fact that the minimum value is not as low as in the other two pillars.

The social pillar encompasses healthcare, basic services, cultural and gender diversity as well as social protection, which shows that, more than ever, firms are preoccupied with these matters the most.

While there are firms that may not give too much attention to these problems, with the minimum value for this pillar being 5.95, the majority of firms already have this in mind, and the mean for this pillar demonstrates it.

4.2. Pearson correlation analysis

Table IV presents the matrix. This analysis is used in statistics as a way to measure the strength and direction of the linear relationship between two variables at the same time, and it is important to test the significant relationship between the variables, ranging from values of -1 to 1.

TABLE IV - PEARSON CORRELATION MATRIX

Variables		1	2	3	4	5	6	7	8	9	10	11	12	13
1	**RoS**	1												
2	**ESG**	-0.0455***	1											
3	**Env**	-0.0135	0.8625***	1										
4	**Social**	-0.0393***	0.8957***	0.7343***	1									
5	**Gov**	-0.0659***	0.6949***	0.4067***	0.4184***	1								
6	**B Size**	-0.0367***	0.3801***	0.4035***	0.3545***	0.1541***	1							
7	**BGDiv**	0.0000	0.2987***	0.2453***	0.2756***	0.2142***	0.1008***	1						
8	**BSkills**	0.0237**	-0.0645***	-0.1034***	-0.1134***	0.0911***	-0.1939***	-0.1682***	1					
9	**BMComp**	-0.0052	0.0402***	0.034***	0.0430***	0.0152	0.0794***	-0.0269**	-0.009	1				
10	**Ln_NoEmp**	-0.2514***	0.4181***	0.3612***	0.4042***	0.2084***	0.4194***	0.0219*	-0.1018***	0.0396***	1			
11	**FinLev**	-0.1200***	0.1892***	0.1721***	0.1442***	0.1517***	0.2004***	0.0295***	-0.0915***	0.0212*	0.2704***	1		
12	**Ln_GDP**	0.0299***	0.0447***	0.0169	0.0718***	0.0180*	-0.2214***	0.1175***	0.0375***	-0.0259**	-0.1215***	0.0190***	1	
13	**Inflation**	0.0064	-0.0732***	-0.0668***	-0.1002***	-0.0005	-0.0076	-0.0888***	0.1040***	-0.0156	0.0684***	0.0237***	-0.3477***	1

While analyzing Table IV, we conclude that there is a strong positive correlation between the ESG rating and the environmental, and social pillars, while there is also a moderately strong positive correlation between the ESG rating and the governance pillar.

There is also a moderately strong positive correlation between the environmental pillar and the social pillar.

Neither of the other two variables tend to show any kind of strength or direction with one another. However, the majority of the correlations present significance at the 1% level.

4.3. Regression analysis

Table V provides the results of the regression analysis using the Ordinary Least Squares (OLS) model. In this table, there are four models that refer to each hypothesis.

Model 1 tests the impact of the ESG rating, model 2 tests the Environmental rating, model 3 tests the Social rating, and model 4 tests the Governance rating on the firm's performance given their return on sales.

According to Table V, the results show that ESG rating, as well as the individual pillars of Environmental, Social, and Governance, have a positive and significant relationship with ROS. Similarly, when disaggregating ESG in each of its pillars, the results also show a positive and significant relationship with ROS.

According to Table V, the results show that ESG rating, as well as the individual pillars of Environmental, Social, and Governance, have a positive and significant relationship with ROS. Similarly, when disaggregating ESG in each of its pillars, the results also show a positive and significant relationship with ROS.

TABLE V - REGRESSION ANALYSIS RESULTS

Variables	Model 1 H1: ESG	Model 2 H1.1: Env	Model 3 H1.2: Social	Model 4 H1.3: Gov
ESG	0.002***			
	(-9.743)			
Env		0.002***		
		(-10.211)		
Social			0.002***	
			(-7.91)	
Gov				0.001***
				(-3.837)
BSize	0.008***	0.007***	0.008***	0.010***
	(-6.411)	(-5.812)	(-6.946)	(-8.570)
BGDiv	-0.001***	-0.001**	-0.001*	0.000
	(-2.765)	(-2.085)	(-1.938)	(-1.138)
BSkills	0.000	0.000	0.000*	0.000
	(-0.914)	(-1.489)	(-1.669)	(-0.915)
BMComp	0.000	0.000	0.000	0.000
	(-0.060)	(-0.186)	(-0.028)	(-0.151)
FinLev	-0.164***	-0.164***	-0.165***	-0.167***
	(-9.290)	(-9.288)	(-9.290)	(-9.393)
Inflation	0.494*	0.490*	0.464	0.292
	(-1.670)	(-1.659)	(-1.565)	(-0.985)
Ln_NoEmp	-0.053***	-0.051***	-0.051***	-0.047***
	(-22.879)	(-22.734)	(-22.188)	(-21.003)
Ln_GDP	-0.047***	-0.046***	-0.045***	-0.039***
	(-4.675)	(-4.633)	(-4.542)	(-3.908)
Constant	1.029***	1.045***	1.023***	0.964***
	(-9.199)	(-9.346)	(-9.119)	(-8.577)
Observations	6,181	6,181	6,181	6,181
R-squared	0.11	0.111	0.105	0.098

Note: *** p<0.01, ** p<0.05, * p<0.1. T-test value is shown in parentheses.

According to Table V, the results show that ESG rating, as well as the individual pillars of Environmental, Social, and Governance, have a positive and significant relationship with ROS. Similarly, when disaggregating ESG in each of its pillars, the results also show a positive and significant relationship with ROS.

These results imply that ESG rating has a positive impact on the firm performance of public listed European firms. Going back to the literature, this was to be expected given the fact that studies that present ESG ratings to have a negative impact on firm performance are focused outside of Europe (Ruan & Liu, 2021; Saygili et al., 2022; Sharma & Thukral, 2015).

Studies with a focus on separate European countries had already concluded that ESG has a positive impact on firm performance (Almeyda & Darmansyah, 2019; Pasquini-Descomps & Sahut, 2013). ESG matters and their impact on financial performance tend to be related to the geographical background of the sample (Ghasemzadeh & Seyedhosseini, 2020).

The analysis suggests that implementing ESG practices can benefit firms in various ways, such as increasing the number of sales. This happens because customers, consumers, and investors are aware of the modern-day problems and whether firms engage in active causes related to environmental, social, and corporate governance problems. European firms that tend to ignore these problems also tend to have worse financial performances, so the lower the ESG score the less financially stable the firm is.

5 – Conclusions and Limitations

This study examined the impact of the ratings for ESG and Environmental, Social, and Governance pillars based on 6181-year observations and 1445 firms.

The results show that there is a positive impact of ESG rating on firm performance. The research shows that firms with higher ESG ratings tend to outperform their peers in terms of financial performance.

There is also a positive relationship between the Social, Governance, and Environmental pillars and firm performance, meaning that firms that invest their time and effort in improving these three pillars will also see a positive return on sales, and consequently a positive firm performance compared to their peers that do not have any kind of regard for these topics.

Overall, the findings of the study suggest that ESG ratings can have a significant positive impact on firm performance. As such, firms that prioritize ESG factors are more likely to create long-term value for their stakeholders and contribute to a more sustainable future.

All in all, this study highlights the benefits of incorporating ESG fundamentals as well as their pillars into corporate decision-making processes and reinforces the need for firms to prioritize sustainable practices to achieve long-term success.

This study has some limitations that could potentially affect a study relating to ESG ratings and firm performance, that future studies could overcome and try to reach their own conclusions.

The first limitation is the geography of the study. We are still in the very beginning of ESG disclosure and ratings for individual pillars such as Environmental, Social, and

Governance, and so, most of the sample comes from countries high in population, or media focus, such as the United Kingdom, France, and Germany.

Even though the purpose of this study was to understand the impact of ESG on firm performance for a European sample, most of the sample came from a handful of countries, while about 10 countries do not even make the cut. This might not show the same reality as if the sample was distributed more evenly. Future studies can consider firms from different geographies.

Another limitation is the actual ESG rating methodology, previously suggested by Berg et al., (2022). These ratings are often based on different methods and frameworks. For instance, in this study, we analyzed the Thomson Reuters ratings, which range from zero to 100 rating. However, there are different rating agencies, some might even use the zero to 100 rating scale but might classify the same firm with another value based on their own metrics or might even have a completely different rating scale.

This can make it difficult to compare ESG ratings across firms or over time. Moreover, the criteria used to assess ESG factors may vary, leading to different results.

The limitations of ESG rating methodologies could influence the validity and reliability of the findings.

A further limitation is the data quality and availability. The availability and quality of ESG data can vary greatly across firms, sectors, and regions. A lack of data or inconsistencies in the data can limit the accuracy of the results. Additionally, ESG data may be self-reported by the firms themselves, which can raise questions about its reliability.

Another limitation might be the time frame of this study. The study is based on the nine years from 2012 to 2020. However, most firms do not have values from the early years from 2012 to 2015, which resulted in fewer observations, from fewer countries, as there are countries that did not even report ESG ratings up until 2015.

ESG factors may have a long-term impact on firm performance, but short-term fluctuations in performance may not necessarily be related to changes in ESG ratings.

Therefore, the time horizon over which the study measures firm performance could influence the results.

Lastly, firms with higher financial performance may be more likely to invest in ESG factors, rather than the other way around. This endogeneity problem can lead to biased estimates of the relationship between ESG ratings and firm performance.

Overall, while a study relating ESG ratings and firm performance can provide valuable insights, it is important to consider these limitations when interpreting the results.

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