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Does the ESG Index Affect Stock Return? Evidence from the Eurostoxx50

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Abstract: Recent findings provide evidence that companies highly rated in terms of Environmental, Social, and Governance (ESG) score report higher excess returns and lower volatility, this being supported by the assumption that ESG factors are considered, by market agents, as a good proxy for firms' financial soundness. The aim of this paper is to investigate how ESG components affect stock returns. We use a two-step methodology to analyze the performance of companies included in the Eurostoxx50 index over the 2010–2018 period according to their ESG score. To classify companies in terms of ESG commitments, we combine several ESG indicators (quantitative ratings, scorings and qualitative-opinions) collected on a monthly basis. Our results do not support previous evidence; the Eurostoxx50 companies' performance does not seem to be affected by their efforts in terms of ESG commitments.

1. Introduction

In recent years, the role of low-environmental impact (sustainable) stocks has become crucial in financial markets, especially in Europe. According to Eurosif (2020), Sustainable and Responsible Investment (SRI) is an approach that combines fundamental analysis with the evaluation of Environmental, Social, and Governance (ESG) factors in the research, analysis and selection process of securities within an investment portfolio to better capture long-term returns for investors, and to benefit the society by influencing the behavior of companies. Investors ask for positive environmental and social impact [1,2], as represented by the increase of recourses to green bonds and social impact bonds (SIB) [3]. At the same time, climate changes and social inequality have forced policy makers and regulators to concentrate their actions on climate and social risks [4–7].

For most companies, a growing demand for sustainable products may represent a business opportunity or a forced road and they have to face higher costs and manage new variety of risks, which, at this stage, are mainly environmental-driven. The 2014 Volkswagen emission scandal, which caused the fall of the vehicle manufacturer's stock price by 18%, is a powerful example of how environmental standards may impact on a company's financial performance, via compliance and reputational risk.

Do markets evaluate the ESG attitude of a firm when choosing their investment? In principle, higher stock returns should correspond to good management of ESG factors: companies are perceived as able to improve the firms market position by avoiding myopic decisions in relation with ESG choices [8]. The assumption is that, similarly to traditional variables, ESG factors are considered by market agents as a proxy for firms' financial soundness.

Researchers have investigated the role of ESG factors in Corporate Financial Performance (CFP) since 1970, producing more than 2000 works [9]. The larger branch of research is focused on the performance of portfolios containing ESG-standards, respectful companies. Two critical points

concerning ESG assessment are inferred from literature: the lack of granular data on ESG firm's attitude and risk exposure, on the one side and the lack of a reliable ESG rating system, on the other side.

Recently well-known data providers, such as Bloomberg, Thomson Reuters and Investments banks (Morgan Stanley Capital International (MSCI)) have built some ESG ratings, also known as ESG score, underlying a substantial divergence of judgments [10,11] and great "confusion" on methodology and disclosure [12]. ESG ratings, scorings and opinions coexist and are often used, communicated and perceived as similar indexes.

A fundamental difference emerges between ESG ratings and ESG scorings and opinions. ESG ratings measure a company's exposure to ESG risks: higher ratings indicate a less relevant exposure to such risks and a better ability to manage them. ESG scores and opinions, instead, do not adopt a forward-looking approach and consequently do not provide a risk assessment; they measure a company's ESG attitude, offering a valuation of how virtuous companies have been and currently are in managing ESG factors.

The aim of this paper is to investigate how ESG drivers affect stock returns. We use a two-step methodology to analyze the performance of companies of the Eurostoxx50 index over the 2010–2018 period according to their ESG score. To classify companies in terms of ESG commitments, we use several ESG indicators (quantitative ratings, scorings and qualitative-opinions) collected on a monthly basis. The panel data technique allows one to test how these variables affect company returns. Our results show that ESG information is not timely received by the market for most of the companies, and that the variability of stock prices is driven by other risk factors.

Most of the previous studies assess the effects of ESG risks on stock performance by using a single ESG index, ratings rather than scorings, on annual basis. Our contribution sits in building an ESG proxy using several ESG measures (i.e., ratings, scorings and opinions) from different providers in order to overcome the lack of a reliable ESG index. Unlike other studies, not only are we able to balance the divergence among the different indexes, but we can also count for more data points, which allow us to measure the impact of ESG factors on stock returns on a monthly basis.

2. Inspiring Literature

The importance of ESG factors in investment decision has increased in recent years, due to the growing interest of both investors and regulators in socially responsible investments and impact finance. Scholars have investigated the role of sustainable finance under different perspectives. As for our purpose, three main strands of literature gave cause for reflection, covering three different aspects: the impact of ESG factors on portfolio performance; the relation between ESG factors and stock price; and the role of ESG indexes in incorporating firms ESG information.

The literature investigating the effects of sustainable investments on portfolio performance: This strand of literature aims at measuring the impact of sustainable investments on portfolio performance [13–16]. Indeed, ignoring ESG factors may have negative effects on portfolio performance. Gloßner [17] investigates "the price of ignoring ESG risks" on portfolio performance. According to this study, by controlling for other risk factors, a four-factor alpha of 3.5% per year is generated by a portfolio of US companies with a history of ESG incidents. This finding proves that stock prices do not incorporate ESG risks and that poor CR and RSI policies destroy shareholder value. Consequently, creating portfolios with high ESG performance firms might represent a socially responsible investment, as well as a way of improving investment performance. Several different portfolio strategies can be implemented based on ESG measures. According to the 2018 Global Sustainable Investment Alliance (GSIA) Report, these strategies refer to:

- screening and sustainability and impact/community themed investing: portfolios are constructed by including only ESG standards-respectful companies and by eliminating those operating in "non-ethical" sectors, like gambling and weaponry. In this sense, it is possible to find some similarities with the Sharia respectful investments, that characterize the world of Islamic finance. In particular, the Thompson Reuters 2015 Report on Global Islamic Asset Management shows

the areas in which Sharia-compliant investments overlap with investments considered as ESG respectful standards. As pointed out in the report, "Both ESG and Shariah-compliant investment approaches demand that the businesses chosen for investment are socially useful, non-detrimental to humanity, and comply with humanist ethics. Both practice ethical exclusions as part of their investment rules, and their common list of forbidden sectors include alcohol, gambling, tobacco and weaponry—businesses that are condemned or deemed harmful for man and society";

- ESG integration: based on company-specific measures of ESG performance, the ESG integration strategy is based on selecting only stocks related to companies with high ESG rating/index;
- best-in-class selection: this strategy requires to choose among companies within the same sector, only those companies having the higher ESG rating/index.

The report suggests that further research on the effects of ESG criteria and ESG sub-criteria on portfolio performance is necessary. Stark et al. [18] demonstrate that preference for firms with high ESG scores depends on the investment's horizon, as higher ESG firms are preferred over other firms only in long-term investments. Moreover, preference for ESG virtuous companies is also present when investors choose to sell firms with negative returns. In a specific study by Nagy et al. [19], the use of Intangible Value Assessment (IVA) ratings in optimizing portfolio performance with improved ESG ratings is examined, while keeping other factors constant. In order to assess the effect of assets with high and low IVA rating on portfolio performance, the profitability of three strategies are compared. The results show that portfolios with higher IVA ratings produced the best active returns.

Within this strand of literature, some authors investigate the application of "ESG screening" on portfolio performance. A research conducted by Amundi in 2018 demonstrates that a portfolio constructed by applying the ESG screening outperforms portfolios to which this filter has not been applied. Specifically, the strategy is based on picking the best in class stocks and selling those with poor performance in one of the main ESG factors. This strategy generates a 3.3% extra yield in North America and 6.6% in the Eurozone. Moreover, the study shows that even if ESG indexes do not directly affect stock prices; they influence the performance of the best and the worst companies in ESG investments. Other studies are based on assessing the sustainable investment effects on financial performance by considering the E, S and G factors separately, instead of considering the combination of the three (Overall ESG). Gibson and Krüger [20] demonstrate the casual interpretation of the sustainability on the investors' risk-adjusted performance by measuring investor's performance based in their environmental (E) and social (S) investments. Finally, Krüger [21] offers a different point of view regarding the assessment of the relation between ESG and financial performance. By considering Corporate Social Responsibility (CSR) news as a proxy for ESG performance, the author carries out a textual analysis in order to divide good CSR news from bad CSR news and subsequently to measure the effects of such information on the investors' reaction. This type of analysis, based on the so-called "behavioral finance", aims at exploring the effects of psychological traits and biases on investment decision. The textual analysis can identify CSR news that might be able to influence the investors' opinions and, according to the hypothesis of behavioral finance, influence stock prices indirectly. This point of view opens up new horizons of research, as it applies the so-called "investment analysis" in quantifying the effects of ESG on stock prices. In the light of the aforementioned, as additional contribution to the literature, our work brings some evidence that ESG screening is not an appropriate pre-selection method to improve portfolio performance.

Literature investigating the role of ESG factors in determining stock prices: Several authors [22–34] studied how investors perceive firms ESG attitude and how they incorporate this factor in their investment decision, influencing financial performance and, in particular, stock prices. There is evidence that companies fulfilling sustainability requirements have better market performance [35,36], even though ESG factors may impact differently according to specific businesses and sectors (Khan et al., 2016). Friede et al. [9] have analyzed more than 2000 studies, starting in 1970, exploring the effects of ESG on corporate financial performance (CFP). Many of these studies (62%) highlight evidence of positive effects of ESG factors on financial performance. Others, mostly the ones adopting the

portfolio theory approach, point out only a neutral relation between ESG and CFP, even though these results are overlaid with systematic and idiosyncratic risks. The authors also highlight that the ESG index effects on CFP vary among asset classes and countries, showing that in emerging markets, ESG strategies outperform other investment opportunities. Krüger [21] demonstrates that investors respond differently to adverse Corporate Social Responsibility (CSR) events with respect to positive news: this response is weakly negative for positive CSR events, and it is strongly negative to adverse events. The author shows that CSR news, carrying important legal and economic information, has the greatest impact on the investors' reaction. A second issue investigated by Krüger is related to the "reverse causality" between ESG and financial performance. As a matter of fact, according to Krüger, the effects of ESG investments can be measured in the short-run and in the long-run. In the latter scenario, it is hard to define whether companies are "doing well" in terms of ESG performance because of their successful financial performance, or vice versa. According to Hong et al. [37] the more profitable companies, in terms of ESG standards, are the ones subject to softer financial constraints.

In the last few years literature have focused on a more specific perspective: the relation between ESG factors and stock prices. Giese G. and Nagy Z. [29] built a financial model according to which the value of a company is a function, among other factors, of the ESG scores and considers a time lag between changes in ESG scores and their impact on the assessments. Their work highlights that stock markets react more sensitively to ESG information for companies that do not have extreme ESG scores, i.e., neither very low nor very high, and that stock markets show a stronger reaction to improvements in ESG, rather than to drops in ESG performance. They also highlighted that the change in ESG characteristics shows a greater correlation with share prices, over a one-year time horizon, than in shorter or longer periods. Cui B. and Docherty P. [38] examine stock returns around ESG news announcements by using the event study methodology and calculate the cumulative abnormal return (CAR) to 21 trading days around for each news release. They found evidence that the market overreacts to ESG news; this could have some adverse implications in terms of market efficiency and investors behavior.

In the light of the aforementioned, in our work, in order to make an additional contribution to the literature, we analyze the direct relationship between equity yield and the variability of the ESG factor for an equity index of international relevance. In particular, through a panel analysis, we measure whether, and to what extent, ESG information is embedded in share returns, reducing the effects of omitted variables.

Literature investigating the role of ESG index in incorporating ESG information: ESG indexes are undoubtedly necessary to carry out research exploring the contribution of the ESG factors on both investments/portfolio performance and stock prices. Most of the cited studies [39–41] have relied, for their analysis, on ESG indexes. Nevertheless, scholars are aware that the ESG indexes market is still at an early stage, this resulting in possible misleading results of the carried researches. Dorfleitner et al. [42] contributed evidence regarding a lack of convergence of ESG measurement conception, while Escrig-Olmedo et al. [43] state that ESG indexes do not fully incorporate sustainability principles in their methodology. Krüger [21] identifies a "measurement error" due to the qualitative nature of ESG standards: each ESG rating provider has its own method to evaluate ESG performance, leading to a meaningful divergence among different ESG ratings related to the same company. Berg et al. [12] point out that the divergence in ESG ratings depends on the use of different parameters while evaluating ESG performance: agencies refer to different ESG categories, use a different method to assess such categories and give different importance to each of them. Therefore, on one hand, ESG rating agencies contribute to reduce information asymmetry, but on the other hand, ESG ratings valuation might be misled by different kinds of assessment standards. In spite of this scenario, investors have been proven to be able to exploit information coming from these ratings in evaluating stock prices, thanks to the increasing number of information on the company ESG profile and the use of other indexes, such as the eco-efficiency metric [44]. This metric is used in order to assess the ability of a company of maximizing returns without negative impact on the environment. In the light of the

aforementioned, in order to make an additional contribution to the literature, as well as that contributed by other authors [45–48], in our work we consider an "ESG Overall" index, constructed by combining several ESG indicators (i.e., ratings, scorings and opinions) from different providers. In this way, unlike other studies, we are able to smooth the divergence among the different indexes and, counting for more data points, to measure the impact of ESG factors on stock returns on a monthly base.

3. Research Design

3.1. Method

The aim of this paper is to investigate the effect of ESG indexes on stock returns. For our purpose, we select a sample of 46 public firms (listed on the Eurostoxx50), calculating monthly stock returns and ESG indexes, for the 2010–2018 timespan. Consequently, the dataset contains 105 monthly data points, from April 2010 to December 2018. Stock prices have been extracted by Bloomberg, while as ESG index we assumed the "ESG Overall" index taken from the data provided by CSRHub.

Our analysis is based on a two-step methodology: a panel analysis and multiple linear regression.

1. The panel data analysis is performed in order to evaluate the general effects of ESG index variations on companies' returns. In particular, the purpose of this panel is to identify a causal relationship between returns and the ESG index. Consequently, the model was not optimized for predictive purposes, not including the set of exogenous variables specific to each company.
2. Given the results from the previous analysis, a multiple regression for each company in the sample is run. The aim is to assess how the ESG sub-indexes (E, S and G) affect returns for each company.

3.2. Data Source

In order to investigate the effects of ESG information on stock returns, the "ESG Overall" index data are taken from the data provided by CSRHub. CSRHub is a B Corporation that provides access to ESG ratings of over 17,268+ companies from 134 industries in 141 countries. The "ESG Overall index" is composed of four components, which may be gathered to the three ESG factors, namely: The Social factor (the combination of Community and Employees components for CSRHub), Environmental, and Governance. In order to rate companies, this data provider aggregates information coming from several other data providers. Subsequently, these data are normalized by the data provider in order to express the index in a scale from 0 to 100. The normalization is necessary as the data sources usually use a non-homogeneous way of expressing rankings of companies' performance. For instance, some measures might be expressed as "+" if positive and as "−" if negative, whereas other judgements can be expressed in letters. After the normalization, data for each factor are put together with a big data algorithm, and eventually the "ESG Overall" index is determined as the union of the mentioned factors. As described by CRSHub on its website, each factor is divided into four sub-indicators:

1. Community:

   - Development & Philanthropy Community: regards commitment to the local, national and global community in which the company operates. It also covers the relationships between the community itself and the company, its attention to public well-being and its commitment to reducing the impact on the environment in terms of corporate infrastructure;
   - Human Rights & Supply Chain: reflects the social commitment of the company (such as voluntary work, etc.), respect for human rights and for work integrity through, for example, respect for the worker, support for freedom of association and exclusion of child or forced labor;
   - Product: measures the social and environmental impact of the products and services offered under different aspects, including their design, their management and their development. It also reflects the contribution to the search for new sustainable technologies and the supply

of socially useful goods or services that improve the general well-being of consumers. These aspects also extend to the correctness of sales practices and product safety and quality;

2. Employees:

   ▪ Compensation and Benefits: regards the ability to establish solid working relationships with employees through the adequacy of their compensation and of their benefits. The latter are aimed at improving the working environment in the medium-long term and at improving the morale of the workers;

   ▪ Diversity and Labor Rights: includes compliance with non-discriminatory policies and practices towards employees and the creation of a respectful environment that is open to diversity;

   ▪ Training, Health and Safety: measures the company's effectiveness in providing a healthy and safe workplace. It includes the quality of work policies and programs that encourage the personal development of workers, even outside the company;

3. Environment:

   ▪ Energy and Climate Change: indicates the company's effectiveness in contributing positively to the mitigation of climate change through targeted policies and strategies, including the development of new sustainable technologies and the reduction of consumption and emissions that are harmful to the environment;

   ▪ Environment Policy and Reporting: reflects the quality of company policies which aim to reduce environmental impacts, specifically in terms of reporting and compliance;

   ▪ Resource Management: regards the efficiency of the use of resources in the production process and the commitment to reduce waste of useful resources and minimize their use;

4. Governance:

   ▪ Board: measures the effectiveness of the company in following the best practices in the principles of corporate governance related to the composition of the board of directors and the independent decision-making process;

   ▪ Leadership Ethics: reflects the quality of relationship management with different stakeholders and the commitment and effectiveness of integrating the surrounding environment with the company's core business;

   ▪ Transparency and Reporting: regards transparency of corporate policies aligned with sustainability objectives towards stakeholders, specifically through the drafting of reports, compiled according to public standards such as, for example, Global Reporting Initiative or Accountability.

3.3. Data Analysis

Panel data analysis:

This analysis aims at assessing whether the effects of the "ESG Overall" index on stock return varies across companies.

The panel consists of 46 companies which belong to the Eurostoxx50 index; 4 companies have been excluded due to the lack of data in the time interval chosen for the analysis. The monthly observations start in May 2010 and end in December 2018. For this reason, we could not include GDP as a control variable, as well as we could not make use of interpolation techniques, or other techniques, to derive the monthly data. The panel is balanced, i.e., the time series are complete. The random effects model is:

$$Return_{it} = \alpha_i + \beta_1 \Delta OVERALL + \beta_6 \Delta EURIBOR + \beta_7 \Delta UNP + \beta_8 \Delta DIVIDEND\ YIELD + \varepsilon_{it} \qquad (1)$$

and the fixed effects model is:

$$Return_{it} = \beta_1 \Delta OVERALL + \beta_6 \Delta EURIBOR + \beta_7 \Delta UNP + \beta_8 \Delta DIVIDEND\ YIELD + \varepsilon_{it} \qquad (2)$$

where:

- $\Delta OVERALL$ = variations of the ESG overall index;
- $\Delta EURIBOR$ = changes in the Euribor rate, which is a macro variable;
- ΔUNP = changes in the unemployment rate, which is a macro variable;
- $\Delta DIVIDEND\ YIELD$ = growth rate of the dividend/share indicator of the Eurostoxx50 index.

The sub-indexes have not been included in order to avoid multicollinearity among regressors. The endogenous variable is represented by the returns of individual stocks belonging to Eurostoxx50.

In Table 1, results from both the models are presented.

Table 1. Panel data analysis results.

	Intercept		OVER		EUR		UNP		DIV		Adj R^2
Model	*Value*	*p-Value*	*Value*	*p-Value*	*Value*	*p-Value*	*Value*	*p-Value*	*Value*	*p-Value*	*Value*
FIXED EFFECT	/	/	0.180	0.005 **	−0.010	0.000 ***	−0.010	0.000 ***	−1.890	$<2.20 \times 10^{-16}$ ***	0.010
RANDOM EFFECT	0.010	0.000 ***	0.100	0.049 *	−0.010	0.000 ***	−0.010	0.000 ***	−1.890	$<2.20 \times 10^{-16}$ ***	0.020

* *p*-value < 0.05; ** *p*-value < 0.01; *** *p*-value < 0.00.

The Hausman test was run to decide whether to use fixed effects or random effects. The test showed that the models produce non statistically diverse results. In particular, the Hausman test produces a chi squared of 052 with 8 degrees of freedom and a *p*-value of 0.9998 (the alternative hypothesis is that one model is inconsistent). The fixed effects model measures whether, in general, the Overall variable affect returns. The control variables coefficients, as well as the Overall coefficients, are statistically significant. This means that the panel has detected a causal and statistically significant effect between the ESG index and returns. This result is valid regardless of the adjusted R squared value. As a matter of fact, there is a difference between the statistical significance of the coefficient (measured by the p-value associated with the coefficient of the regressors) and the variable's ability to explain the variance of the returns (measured by the adjusted R-square). A low adjusted R squared and a significant coefficient (as in our case, 1% for Fixed effect and 2% for Random Effect) means that the "Overall" alone is not able to model the returns, but it can be used, combined with other variables, in more complex models. Subsequently, we tested the variable effects (or random) model. This model, in which the intercept is also considered as a random variable, allows us to assess whether the effects of the "ESG Overall" index varies across companies. In this case, the Overall index, the control variables and the intercept are statistically significant. This confirms that the effect of the Overall variable differs from company to company. In order to verify for which companies, the effect of the Overall index (and, in particular, of its sub-indices) is stronger, a multiple linear regression for each individual company is run.

Multiple linear regression:

This analysis consists of running, for all 46 companies, a regression in which quarterly stock returns are the dependent variable and the regressors are represented by the returns' lagged value, in order to satisfy the Ordinary Least Squares (OLS) hypothesis of uncorrelated errors, and the variations of the four factors. Therefore, the time series are stationary. The preliminary model is:

$$Return_t = \alpha + \beta_1 \Delta GOV_t + \beta_2 \Delta COM_t + \beta_3 \Delta EMP_t + \beta_4 \Delta ENV_t + \beta_5 Return_{t-n} + \\ \beta_6 \Delta EUR_t + \beta_7 \Delta INF_t + \beta_8 \Delta UNP_t + \varepsilon_t \qquad (3)$$

where:

- ΔGOV = changes in the Governance synthetic sub-index
- ΔCOM = variations of the Community synthetic sub-index
- ΔEMP = variations of the synthetic sub-index Employees
- ΔENV = changes of the synthetic sub-index Environment
- **Return$_{t-n}$** = lagged value
- ΔEUR = changes in the Euribor rate, which is a macro variable
- **ΔINF$_t$** = inflation rate, which is a macro variable
- ΔUNP = changes in the unemployment rate which is a macro variable

However, macroeconomic variables have not been included as they resulted in not significantly affecting stock returns. Consequently, the more parsimonious, and final model, is:

$$Return_t = \alpha + \beta_1 \Delta GOV_t + \beta_2 \Delta COM_t + \beta_3 \Delta EMP_t + \beta_4 \Delta ENV_t + \beta_5 Return_{t-n} + \varepsilon_t \qquad (4)$$

In order to avoid multicollinearity, for each company, the covariance matrix of the independent variables is computed. Subsequently, for every regression, the highly correlated variables are excluded. In order to assess whether the lagged values of factor variation better fit the returns at time the Granger causality test is run for lags from 1 to 12 (which is a 1-year lagged value) of the four factors. Differently from the first type of regression, we chose to consider quarterly, instead of monthly, returns, since the four factors are more frequently updated on a quarterly basis instead of a monthly basis. Moreover, in order to assess the correct specification of the model, the Durbin–Watson test is run. This test investigates the presence of autocorrelation among the residuals of a regression model. The alternative hypothesis is that if autocorrelation is greater than zero, the model is not correctly specified and the coefficients from the regression might be biased. The Durbin–Watson test confirms that the model is correctly specified for all 46 companies, as it confirms the absence of serial correlation among errors. Moreover, for all these companies, the lagged returns are considered one at time $t-1$. By running the regression on all the 46 companies, the ESG factors are significant only for 7 companies, which show different patterns for Social and Governance factors, in addition to the Environmental one (Table 2).

The "Social factor" (combination of Employees and Community components) is significantly correlated with stock return for five out of seven companies, while the "Governance factor" is significantly and positively correlated with stock return for two out of seven firms.

In particular (Table 3), Banco Bilbao and Volkswagen AG are positively correlated with Governance, and Engie is positively correlated with Social via "Community". Sanofi and Total Petrochemicals are negatively correlated with Social via Employees, while Iberdrola SA and Vinci SA are negatively correlated with Social via Community. In other words, the performance of individual shares is positive or negative, but significantly correlated to specific ESG factors.

Finally, for each company, the Granger causality test was run on all the 46 companies. This test determines whether lagged values of a stationary time series affect present values of another stationary time series. As a matter of fact, it is reasonable that quarterly returns might be influenced by past values of the "ESG Overall" index up to the fourth lag (i.e., up to one year). However, the Granger causality test does not detect any kind of relation among factors' lagged values and returns for none of the 46 companies.

Table 2. Regression results for multiple regression with returns (significant for *p*-value < 0.05).

| | Intercept | | Lagged Return | | GOV | | SOCIAL FACTOR | | | | ENV | | Adj R² | DW Test | |
| | | | | | | | COM | | EMP | | | | | | |
Company Name	Value	p-Value	Value	p-Value	Value	p-Value	Value	p-Value	Value	p-Value	Value	p-Value	Value	Value	p-Value
BANCO BILBAO S.A.	0.000	0.650	0.620	0.000 ***	1.120	0.030 **	/	/	0.000	0.870	/	/	0.330	2.550	0.950
ENGIE	0.000	0.778	0.430	0.000 ***	0.390	0.260	0.540	0.010 **	0.220	0.390	0.090	0.810	0.330	2.280	0.810
IBERDROLA S.A.	0.000	0.334	0.690	0.000 ***	0.400	0.170	−0.600	0.010 **	-0.020	0.940	/	/	0.490	1.950	0.460
SANOFI	0.000	0.577	0.430	0.010 **	−0.040	0.900	/	/	−0.740	0.030 **	0.040	0.890	0.310	2.350	0.880
TOTAL PETROCHEMICALS	0.000	0.001 **	0.190	0.160	0.490	0.070	/	/	−0.600	0.010 **	/	/	0.280	2.550	0.960
VINCI S.A.	0.000	0.410	0.520	0.000 ***	−0.200	0.620	−0.650	0.040 **	0.090	0.710	0.700	0.060	0.520	1.800	0.310
VOLKSWAGEN AG	0.000	0.307	0.480	0.000 ***	1.110	0.030 **	−0.570	0.180	0.300	0.580	/	/	0.520	2.320	0.870

* *p*-value < 0.05; ** *p*-value < 0.01; *** *p*-value < 0.001.

Table 3. Significant factors by companies.

SOCIAL		GOVERNANCE
COMMUNITY	**EMPLOYEES**	
ENGIE	SANOFI	BANCO BILBAO S.A.
IBERDROLA S.A.	TOTAL PETROCHEMICALS	VOLKSWAGEN AG
VINCI S.A.		

4. Empirical Findings

Our analysis shows that the linear correlation between the ESG Index and stock returns, at least for the observed market, is still very weak or absent, highlighting that the volatility of returns is still to be found in other factors, or is attributable to a nonlinear relation between the two variables. However, the panel data analysis demonstrates that the "ESG Overall index" has, in general, a statistically significant and positive impact, on returns. Moreover, the random effects model shows that the impact of the "ESG Overall" index varies among companies. The regression analysis points out that, for 7 companies out of the 46 included in our sample, there is a significant correlation between the variations of the "ESG Overall" factors and stock returns. This means that, for some companies, investing in ESG led to higher returns. This result can be attributed to the active role of these companies in the ESG investments field and to the sector they belong to. Moreover, those companies operate in sectors in which ESG investments have a significant relevance on company profitability, such as the energy and utilities sectors. This might explain the presence of a linear relation between the variables. Finally, the Granger causality test shows that, for our sample, the lagged values of the four factors do not affect future returns.

5. Conclusions and Discussion

The paper shows that the ESG factors affect returns; the selected "ESG Overall" index contributes only to a very small extent when modeling returns. The statistical analysis highlights that the effect of the Index varies from company to company. This means that, at this stage, investing in ESG and communicating ESG strategies positively impacted on return only for few firms, mostly operating in specific sectors like energy and utilities. This research highlights at least two future lines of investigation. Firstly, further tests need to be conducted on other markets to identify the existence of the correlation between the ESG index and shares profitability. Secondly, it will be interesting to monitor if the contribution of the ESG factor on firms' performances will increase, compared to traditional financial variables.

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