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Determinants of ESG Investment Positioning: Cross-Sectional Evidence from Global ETF Markets

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Abstract:

ESG investing has gradually moved from a niche concept to a relevant driver of financial markets, raising important questions about what truly determines whether an investment product is perceived as ESG-oriented. In such context, this paper examines the determinants of ESG investment positioning in global ETF markets, with a particular focus on ETFs as composite products, where ESG classification extends beyond the traditional environmental, social, and governance pillars. Specifically, we analyze the relationship between the ESG scores of the largest exchange-traded funds, selected by assets under management (AUM), and a set of market and behaviorally interpreted factors. Using cross-sectional data on major globally traded ETFs, the analysis employs correlation techniques and logistic regression modelling to identify factors associated with higher ESG positioning. The results indicate that several key factors contribute to increasing the odds of ESG positioning, most notably assets under management (67,5 %), fund inception period (55 %), and technology sector exposure (38,7 %), all statistically significant at conventional levels ($p < 0,1$ and better), as derived from the logit model. These findings suggest that ESG positioning in ETF markets is not driven solely by underlying sustainability attributes, but also by product-specific characteristics and market perceptions. This contributes to a better understanding of ESG investment dynamics and provides useful insights for portfolio management and the design of sustainable investment strategies.

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1. Introduction

The concept of Environmental, Social and Governance (ESG) has emerged as a central component of modern financial markets in the 21st century, reflecting an apparent shift from previous purely financial objectives towards a more comprehensive assessment of long-term value creation and sustainability (Soratana, 2025). Over the past decade, ESG investing has experienced substantial growth, driven by increasing awareness of climate change, social responsibility, and corporate governance standards. Both institutional and retail investors are thus increasingly integrating ESG criteria into their decision-making processes (de Jong & Rocco, 2022; Zeidan, 2025), while regulators and policymakers continue to strengthen ESG-related disclosure frameworks. As a result, ESG investing has evolved from a niche investment approach into a mainstream paradigm shaping global capital allocation.

At the same time, the rapid expansion of ESG investing has given rise to intensive discussions and growing concerns—in particular, questions have been raised regarding the credibility and consistency of ESG classifications, including the growing issue of greenwashing and the divergence of ESG ratings across providers. These concerns suggest that the traditional three ESG pillars may not be the only, nor necessarily the dominant, factors determining whether an investment product is perceived as ESG-oriented (Taddeo et al., 2026). This is particularly relevant in the context of equity investments and exchange-traded funds (ETFs), where the proliferation of ESG-labelled products and strategies not only reflects underlying sustainability characteristics but also shapes investor demand and perception. Unlike individual firms, ETFs represent composite portfolios, where product-specific characteristics—such as fund size, cost structure, inception year, or geographic allocation—may play an important role in shaping ESG positioning beyond the direct environmental, social, and governance attributes of underlying assets. As a consequence, both academic research and market participants have begun to focus not only on ESG performance itself, but also on other determinants that influence how investment products are positioned and perceived as ESG.

In response to these challenges, this paper aims to examine the determinants of ESG investment positioning in global ETF markets. Specifically, the research investigates which factors influence whether an ETF is classified as ESG-oriented, focusing on both market-based and behaviorally interpreted drivers. The empirical analysis is based on a cross-sectional dataset of the 100 largest ETFs by assets under management and employs correlation analysis and logistic regression modelling to identify the key determinants of ESG positioning. By incorporating variables such as fund size, sector composition, performance characteristics, and risk measures, the research seeks to provide a comprehensive view of the mechanisms underlying ESG investment products positioning.

The contribution of this research is twofold. First, it extends the existing literature on ESG investing by shifting the focus from traditional environmental, social, and governance pillars toward external determinants and product-specific characteristics that shape ESG positioning. While prior studies primarily examine ESG performance at the firm level (Friede, Busch & Bassen, 2015; Pástor, Stambaugh & Taylor, 2021; Galeone et al., 2025), this study emphasizes the role of market structure, fund attributes, and investor behavior in the context of financial products. Second, the analysis provides also practical insights for investment decision-making, particularly in the ETF market, which has become one of the most popular investment vehicles of recent years. By identifying the key drivers of ESG positioning, our findings can offer valuable guidance for both individual and institutional investors seeking to construct informed and credible ESG investment strategies.

2. Relevant literature and theoretical background

2.1 ESG concept, its evolution and role in finance

Environmental, Social and Governance (ESG) considerations have become an important component of contemporary financial markets, extending traditional financial evaluation to include sustainability-related factors (Bednárová & Soratana, 2025). The ESG framework comprises three interconnected pillars (Wijeweera et al., 2026): environmental factors (e.g., climate change, carbon emissions, and resource use), social factors (e.g., labor practices, diversity, and human rights), and governance factors (e.g., board structure, transparency, and shareholder rights) (Nishikawa & Giese et al., 2019; Soratana, 2025).

The modern ESG concept evolved from earlier dimensions of responsible investing, although these approaches are not synonymous. Socially responsible investing (SRI) is primarily based on ethical screening and excluding controversial industries, whereas ESG investing broadened this perspective by incorporating environmental, social, and governance factors alongside traditional financial criteria (Boffo & Patalano, 2020; de Jong & Rocco, 2022). Green investing represents a narrower approach focused predominantly on environmental objectives. A key milestone in relation to investing was the systematical integration of ESG criteria into institutional investment strategies, supported by global initiatives such as the United Nations Principles for Responsible Investment (PRI) (de Jong & Rocco, 2022).

Within this study, the term ESG positioning is used, which following recent literature can be understood as a combination of measurable sustainability characteristics of a product, such as its ESG score or rating, and its market designation as an ESG-compliant investment strategy (Duncombe et al., 2026; Yang

et al., 2026; Cheng et al., 2026). Therefore, it incorporates both the underlying ESG profile of the ETF portfolio and the way these characteristics are communicated and recognized by investors. In the empirical analysis, ESG positioning is primarily operationalized through the relative ESG score of ETFs, with higher-scoring products interpreted as more strongly positioned in the ESG investment segment.

A large body of more recent empirical evidence has suggested that ESG factors are also associated with improved risk-adjusted returns (Friede, Busch & Bassen, 2015; Galeone et al., 2025) and lower downside risk (Derwall, 2011; Florio et al., 2025), although results vary depending on methodology and sample (Friede, Busch & Bassen, 2015; Galeone et al., 2025). The growing importance of ESG has also been reinforced by regulatory developments and increased disclosure requirements (Christensen, Hail & Leuz, 2021). Alongside these developments, ESG investing has expanded rapidly through financial products, particularly equity and exchange-traded funds (ETFs), which offer investors diversified exposure to ESG-aligned assets. ESG ETFs have gained popularity due to their liquidity, transparency, and cost efficiency, allowing both institutional and retail investors to integrate sustainability considerations into portfolio construction (Zeidan, 2025; Katsampoxakis et al., 2026).

However, in contrast to individual firms' stocks, where ESG performance is typically assessed directly through the three core pillars, ETFs represent composite investment products composed of multiple underlying assets, making the evaluation of their ESG characteristics inherently more complex. The ESG characteristics of such products are largely determined by underlying portfolio composition, sector allocation, or index construction methodologies, as well as broader product-specific features such as fund size, cost structure, fund age, and geographic exposure, which are increasingly becoming the subject of empirical research on ESG-labelled investment products (Gebauer et al., 2026; Infante, Curto & Arenas, 2025). This complexity therefore raises important questions about the true determinants of ESG positioning.

2.2 Determinants of ESG positioning of investment products

A substantial body of literature has examined the determinants of ESG scores and the factors influencing the positioning of firms and investment products as ESG-oriented. At the firm level, empirical studies consistently highlight the role of size, governance quality, and industry characteristics. Larger firms tend to exhibit higher ESG scores due to greater resources, more developed reporting systems, and increased regulatory and reputational pressure (Ioannou & Serafeim, 2012; Khan, Serafeim & Yoon, 2016). Similarly, according to Nishikawa and Giese et al. (2019) sectoral differences seem to play a crucial role, as industries with lower environmental intensity—such as technology—are generally associated with higher

ESG ratings compared to carbon-intensive sectors like energy or heavy manufacturing. Firms investing in digital technologies and green innovation therefore tend to achieve higher ESG scores, as such investments enhance transparency, efficiency, and environmental performance (Wang & Yang, 2024; Zhao et al., 2025).

At the level of financial products, the determinants of ESG positioning are closely related to portfolio composition and fund characteristics. Investment funds with higher exposure to sectors perceived as sustainable—particularly the already mentioned information technology or also communication services—tend to exhibit higher ESG scores. Recent ETF evidence also suggests that fund characteristics, portfolio composition, and investor demand jointly influence the market positioning of ESG investment products (Infante, Curto & Arenas, 2025). While Rompotis (2022) does not identify a systematic relationship between ESG ratings and fund size, the study highlights that ESG ETFs exhibit considerable heterogeneity, suggesting that product characteristics beyond ESG ratings alone deserve further investigation. Likewise, Pástor, Stambaugh and Taylor (2021) argue that strong investor demand for sustainable assets may increase their market prices and consequently lower their expected future returns, illustrating how investor preferences can influence the valuation of ESG-oriented products.

Other fund-specific characteristics may also be relevant when examining ESG positioning, although the existing evidence is less conclusive. Characteristics such as expense ratios, fund age, and geographical exposure have been researched as potentially relevant determinants (Black & Kölbel, 2024; Morrissey & Kleiman, 2025; Lozano & Martínez-Ferrero, 2022). Newer funds are often designed with ESG considerations in mind (Morrissey & Kleiman, 2025; Vu et al., 2025), reflecting evolving regulatory requirements (Lukács & Molnár, 2025) and investor preferences (Ortez et al., 2026), while funds with higher exposure to developed markets may benefit from more advanced ESG disclosure frameworks (Chau et al., 2025; Lukács & Molnár, 2025). However, the relationship between these factors and ESG positioning is not always linear and may be influenced by broader institutional and market dynamics.

An important challenge in this area is the issue of ESG rating divergence and potential greenwashing. Differences in ESG methodologies can lead to inconsistent evaluations of the same asset, while some firms or products may strategically present themselves as sustainable without substantial underlying improvements (Berg, Kölbel & Rigobon, 2022; Taddeo et al., 2026). This highlights the need to interpret ESG scores not only as measures of sustainability performance, but also as outcomes shaped by reporting practices, regulatory environments, and market incentives.

2.3 Behavioral perspective on ESG investing

In addition to structural and financial determinants, the literature increasingly emphasizes the role of non-financial and psychological factors in ESG investing. Behavioral finance provides a framework for understanding how investor preferences, social norms, and cognitive biases influence investment decisions beyond traditional risk-return considerations (DellaVigna, 2009).

One key insight is that ESG investing often reflects non-pecuniary motivations, where investors derive utility from aligning their portfolios with personal values or societal goals. Empirical studies suggest that investors are willing to accept lower financial returns in exchange for higher ESG performance, indicating the presence of "social preferences" in investment behavior (Renneboog, Ter Horst & Zhang, 2008; Pasquino & Lucarelli, 2025). This is consistent with the broader concept of impact investing, where financial and social objectives are jointly pursued (Serafeim, 2020). Furthermore, recent research highlights the importance of trends and narratives in financial markets. Media headlines surrounding sustainability, technological progress, and responsible investing can influence investor perceptions and capital allocation decisions, contributing to the popularity of ESG investments (Seth & Das, 2026). In particular, the perception that certain companies are inherently more sustainable can amplify their attractiveness within ESG portfolios, regardless of their actual environmental impact.

The interaction between behavioral and structural factors collectively suggests that ESG positioning of investment products is not solely determined by objective sustainability performance. Instead, it reflects a complex interplay of factors, that will be analyzed in this research for the market of particularly relevant ETF investment products, where ESG characteristics may be shaped as much by external factors and demand-side dynamics as by underlying fundamentals.

3. Methodological framework and data

This paper adopts a quantitative, cross-sectional approach to examine the determinants of ESG investment positioning within global ETF markets. In line with the existing literature the analysis focuses on identifying the key characteristics associated with whether an ETF is positioned as ESG-oriented. The main objective of the study is here to identify statistical associations rather than establish causal relationships between fund characteristics and ESG positioning, while future research might extend the analysis using panel data, instrumental-variable approaches, or quasi-experimental designs to investigate causal mechanisms in greater detail.

Based on already referred previous research, summarized in chapter 1, the main research question is formulated as follows: „*What factors determine whether ETF products are positioned as ESG-oriented in global financial markets?* ".

Based on the theoretical and empirical insights discussed in the literature review, several testable hypotheses are derived. Prior research suggests that ESG positioning is influenced by fund size (Ioannou & Serafeim, 2012; Khan, Serafeim & Yoon, 2016), sector composition (Nishikawa & Giese et al., 2019), and evolving market preferences toward sustainability. In particular, larger funds may be more likely to adopt ESG characteristics due to stronger investor demand and reputational considerations (Rompotis, 2022; Ortez et al., 2026), while newer funds may reflect recent regulatory and market trends favoring ESG integration (Morrissey & Kleiman, 2025; Vu et al., 2025). Additionally, funds with higher exposure to technology sectors are often perceived as more sustainable due to their lower environmental intensity and alignment with digital transformation narratives (Wang & Yang, 2024; Zhao et al., 2025).

The explanatory variables were selected on the basis of both ESG-specific literature and broader empirical studies examining the determinants of financial asset valuation and investment characteristics (for example Mottaghi et al., 2023).

Accordingly, the following hypotheses are formulated:

- **H1:** ETFs with higher assets under management (AUM) are more likely to be positioned as ESG-oriented.
- **H2:** Newer ETFs (with more recent inception years) are more likely to be positioned as ESG-oriented.
- **H3:** ETFs with a higher share of technology sector exposure are more likely to be positioned as ESG-oriented.

These hypotheses reflect both structural (size and sector composition) and behavioral (investor preferences, market narratives) determinants of ESG positioning. In addition to these core hypotheses, the empirical analysis includes a set of additional fund-specific characteristics that have as of yet received limited attention in existing literature, and therefore no explicit hypotheses are formulated.

3.1 Summary of variables and ESG positioning definition

The empirical analysis is based on a cross-sectional dataset of the 100 largest exchange-traded funds (ETFs) globally, selected according to assets under management (AUM). The analysis focuses exclusively on equity exchange-traded funds (ETFs) because they represent one of the fastest-growing collective investment products globally, combining broad use by both retail and institutional investors with a high degree of transparency regarding portfolio composition and fund characteristics. In addition, compared with traditional mutual funds, ETFs provide more standardized and publicly available information on holdings and ESG metrics. All data were extracted in March 2026.

The dataset combines financial characteristics, portfolio composition indicators, and approximate ESG scores. To operationalize ESG positioning, a binary dependent variable is constructed. Specifically, ETFs with an ESG score above the sample median are classified as ESG-oriented (assigned a value of 1), while those below the median are classified as non-ESG (assigned a value of 0). Although transforming a continuous ESG score into a binary variable inevitably results in some loss of information, this specification was intentionally adopted because the primary objective of the study is to examine the factors associated with whether an ETF is positioned as relatively ESG-oriented rather than to explain marginal differences in ESG scores themselves. The binary classification also allows for a more simplified and straightforward interpretation and is consistent with the conceptual definition of ESG positioning introduced in the theoretical part. Future studies may complement this approach using continuous-score regression models to assess the robustness of the findings.

$$ESG_high = \begin{cases} 1, & if\ esg_i > median \\ 0, & otherwise \end{cases} \quad (1)$$

Meaning:

- 1 = ETF belongs to the ESG-positioned funds,
- 0 = low ESG positioning.

As summarized in the table 1 below, the independent (explanatory) variables include fund size, cost structure, sector exposure, geographic allocation, performance indicators, and risk measures. Together, these variables capture both traditional financial characteristics and factors linked to ESG perception.

Tab. 1: Definition of variables

Variable	Description
AUM	Assets under management (USD)
esg	ESG score (MSCI ESG Research methodology) (points)
expense	Estimated expense ratio – fees charged by fund (%)
tech	Share of technology sector within ETF assets allocation (%)
us	Share of US exposure within ETF assets allocation (%)
year	Year of fund inception (year)

return	3-year annualized return (%)
vol	Standard deviation of returns (%)

Source: authors' own processing

3.2 Logit model and data specification

To quantitatively examine the determinants of ESG positioning, the study then employs a logistic regression model (logit), which is appropriate for binary dependent variables. The model estimates the probability that a given ETF is classified as ESG-oriented based on its characteristics.

Our model can be expressed as:

$$P(ESG_{high_i} = 1) = \frac{1}{1 + \mathrm{e}^{-Z_i}} \tag{2}$$

$$\boldsymbol{Z_i} = \beta_0 + \beta_1 \ln(AUM_i) + \beta_2 \mathrm{expense}_i + \beta_3 \mathrm{tech}_i + \beta_4 \mathrm{us}_i + \beta_5 \mathrm{year}_i + \beta_6 \mathrm{return}_i + \beta_7 \mathrm{vol}_i \tag{3}$$

where:

- ESG_{high} is a binary variable equal to 1 if the ETF has an ESG score above the median, and 0 otherwise,
- AUM_i represents assets under management,
- $\mathrm{expense}_i$ denotes the expense ratio,
- tech_i captures technology sector exposure,
- us_i reflects geographic exposure to the United States,
- year_i captures fund age based on the difference between the ETF inception year and the year of data extraction (2026), meaning the variable is expressed in negative values where higher values indicate more recently established funds (i.e., values closer to zero represent newer ETFs),
- return_irepresents past performance (3-year return),
- vol_i measures risk.

Estimated coefficients are interpreted primarily through odds ratios (using Euler's number e = 2,7183 raised to the power of resulting coefficients β_1). This specification allows for the estimation of the marginal effects of each variable on the likelihood of ESG positioning, while controlling for other relevant factors.

It should be noted that some explanatory variables, particularly assets under management, may exhibit potential endogeneity with ESG positioning, as investor demand for ESG products can itself influence fund growth. Since the objective of our research is to identify associations rather than causal effects, this potential bidirectional relationship should not invalidate the empirical analysis but has to be considered when interpreting the estimated coefficients. Addressing this issue would require more data or causal identification strategies, such as instrumental-variable and panel-data approaches, which are beyond the data availability and overall scope of the currently presented research.

The analysis relies on publicly available data from Yahoo Finance, Bloomberg, and MSCI ESG Fund Metrics. Financial characteristics, portfolio composition, and fund-level information were obtained from Yahoo Finance and Bloomberg, while ESG scores were primarily based on the MSCI ESG Quality Score. This score evaluates an ETF's ability to manage medium- to long-term environmental, social, and governance risks using 77 underlying ESG indicators. Where complete MSCI observations were unavailable, missing values were conservatively approximated using the corresponding MSCI ESG Peer Percentile, Global Percentile metrics, and cross-validation with publicly available ESG fund information to preserve consistency across the sample. Although this approximation represents a limitation of the analysis, it enabled the construction of a homogeneous dataset for the largest global ETFs.

4. Results and discussion

This chapter will present the empirical findings of the study in three steps - first, descriptive statistics are provided to characterize the dataset and offer an initial overview of the variables; second, a correlation matrix is analyzed to explore the relationships between ESG scores and selected ETF characteristics and finally, the results of the logistic regression model are presented to identify the key determinants of ESG positioning, followed by an interpretation that incorporates both traditional financial reasoning and behavioral perspectives.

Below presented Table 2 reports the descriptive statistics for the variables used in the analysis with the sample consisting of 100 ETFs, ensuring a balanced cross-sectional representation of major global funds. The average ESG score is 45.48, with a standard deviation of approximately 9.98, indicating moderate dispersion across funds. The range (23.3 to 68.7) suggests that the dataset captures both relatively low and high ESG-oriented ETFs, supporting the construction of a binary ESG classification. The mean logarithm of assets under management (lnAUM) is 19.79, reflecting the large size of the selected funds. Expense ratios average is 0.198%, which is consistent with typical ETF cost structures, though variation exists across funds.

From a portfolio perspective, the average technology sector weight is 23.52%, with substantial variation (from 5.29% to 44.70%), indicating that sector composition differs significantly across included ETF products. Similarly, US exposure is relatively high on average (71.26%), reflecting the dominance of US markets in global ETF portfolios. Performance and risk characteristics show that the average 3-year return for selected funds was 7.83%, while average volatility is 17.47%, again with notable dispersion. The mean inception year of 2011 suggests that the sample includes both relatively mature and newer funds, which is important for testing the hypothesis related to ESG evolution over time.

Tab. 2: Descriptive statistics

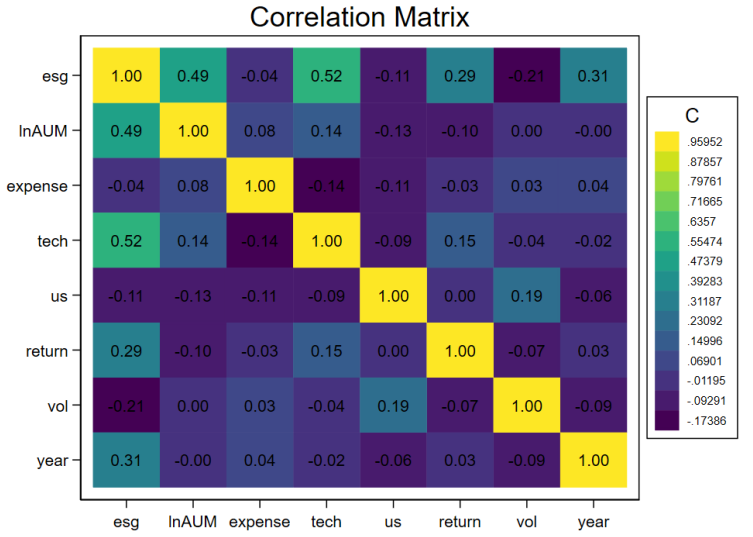
Variable	Obs	Mean	Std. Dev.	Min	Max
esg	100	45.477	9.975	23.3	68.7
lnAUM	100	19.785	.732	16.872	20.596
expense	100	.198	.092	.061	.347
tech	100	23.522	12.031	5.286	44.702
us	100	71.263	17.391	40.256	99.952
return	100	7.828	6.194	-2.547	17.828
vol	100	17.47	6.09	8.128	27.624
year	100	2011.38	6.115	2000	2022

Source: authors' own processing according to data from Yahoo Finance, Bloomberg and MSCI ESG Research (2026)

Following up with the results of correlation matrix (shown in Figure 1) are provided initial insights into the relationships between ESG scores and ETF characteristics. Most notably, ESG scores exhibit a moderate positive correlation with technology sector exposure (0.52) and assets under management (0.49). This supports the hypothesis that larger funds and those with higher exposure to technology tend to be more ESG-oriented. A weaker but still positive relationship is observed between ESG scores and returns (0.29), suggesting that ESG positioning may be associated with performance perceptions, although this relationship is not particularly strong. In contrast, ESG scores show a negative correlation with volatility (-0.21), indicating that ESG-oriented ETFs may be perceived as less risky or more stable investments. This aligns with the notion that investors associate ESG investments with lower downside risk (as supported by Derwall, 2011 or Florio et al., 2025).

The relationship between ESG scores and US exposure is slightly negative (-0.11), suggesting that ESG positioning is not strictly driven by geographic concentration in US markets. Similarly, expense ratios show almost no correlation with ESG scores (-0.04), indicating that fees alone do not strongly determine ESG classification at the descriptive level. Importantly, while several correlations are moderate, none are excessively high, suggesting the absence of severe multicollinearity issues and supporting the validity of the employed regression analysis.

Fig. 1: Correlation matrix results



Source: authors' own processing

To formally quantify the determinants of ESG positioning, a logistic regression model was estimated, the results of which are summarized in Table 3. Within the presented results, technology exposure (tech) emerges as the most statistically significant determinant ($p < 0.01$, coefficient = 0.327). Transforming this coefficient using the Eulers number ($e^{0,327} \approx 1.387$), implies that each one-percentage-point increase in the technology sector allocation raises the odds of an ETF being classified as ESG-oriented by approximately 38.7%, ceteris paribus. This strongly confirms H3 and highlights the structural and narrative importance of technology sectors in ESG positioning.

Assets under management (lnAUM) likewise show a positive effect (coefficient = 0.516, significant at 10%), with a one-unit increase in the logarithm of assets under

management increasing the odds of ESG positioning by approximately 67.5 % ($e^{516} \approx 1.675$). This supports H1 and indicates that larger ETFs are significantly more likely to be ESG-oriented. Fund age (year) is also positive and statistically significant ($p < 0.05$, coefficient = 0.439). This indicates that newer funds are 55.0 % more likely to be ESG-oriented, supporting H2. In practical terms, this also reflects the growing importance of ESG considerations in more recently established investment products.

Within the additional variables, volatility (vol) has a negative coefficient (-0.236), with higher volatility reducing the odds of ESG positioning by approximately 21 %, supporting the view that ESG funds are associated with lower perceived risk. Returns (return) show a positive but statistically weak effect, indicating that ESG positioning may be partly linked to performance narratives, although the relationship is not that robust. Expense ratio (expense) has a positive coefficient (0.075), implying that higher-cost ETFs may be more likely to be positioned as ESG-oriented, potentially reflecting a pricing premium associated with ESG branding. In contrast, US exposure (us) is negative (-0.48), suggesting that ETFs with other geographical allocation— possibly European markets known for their strict ESG regulation and overall sustainability inclination — may exhibit higher ESG orientation. Both of these effects (expense and us) are however statistically insignificant and should therefore be interpreted with caution.

Tab. 3: Results of the logistic regression

esg_high	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
lnAUM	.516	.231	-2.06	.097	-1.093	.773	*
expense	.075	.512	0.73	.464	-1.795	5.885	
tech	.327	.171	3.30	.037	.255	1.002	**
us	-.048	.047	1.02	.31	-.045	.141	
return	.315	.064	1.93	.072	-.112	.141	*
vol	-.236	.109	2.39	.063	-.096	.568	*
year	.439	.133	-0.25	.049	-.231	.179	**
Constant	46.879	219.588	0.21	.831	-383.506	477.264	
Mean dependent var	0.500	SD dependent var		0.503			

Pseudo r-squared	0.327	Number of obs	100
Chi-square	33.602	Prob > chi2	0.000
Akaike crit. (AIC)	40.027	Bayesian crit. (BIC)	60.868

**** p<.01, ** p<.05, * p<.1*

Source: authors' own processing

The model is statistically significant overall (Prob > χ^2 = 0.000) and exhibits a pseudo-R^2 of 0.327, indicating that the selected explanatory variables provide a relatively good fit for distinguishing between ETFs with higher and lower ESG positioning. Nevertheless, the estimated relationships should be interpreted as statistical associations rather than causal effects, consistent with the cross-sectional design of the study.

Beyond the traditional financial explanations presented thus far, the results can be in line with previously mentioned literature interpreted also through a more behavioral lens. First, the strong effect of AUM reflects investor demand dynamics. Larger funds may attract more capital precisely because they are perceived as ESG-aligned, creating a feedback loop where investor preferences reinforce ESG positioning. Although the present analysis cannot distinguish between these mechanisms, the observed relationship is consistent with a potential feedback process between investor preferences and fund characteristics. Second, the dominant role of technology exposure highlights the importance of market narratives, where investors may associate technology firms with innovation, sustainability, and future-oriented growth, even when actual environmental impacts are more nuanced. Third, the negative relationship between volatility and ESG positioning suggests that investors in fact perceive ESG investments as safer. This indirectly aligns with behavioral biases such as risk aversion and the preference for stable, “responsible” assets. Although expense ratios were not statistically significant, the positive sign is consistent with the idea that investors may be willing to pay higher fees for ESG-labeled products, reflecting value-based investing behavior. And finally, the weak but positive relationship between returns and ESG positioning indicates that optimism may also play a role, as investors may associate ESG with superior long-term outcomes.

Overall, the empirical results suggest that ESG positioning of ETF products is driven primarily by fund size, technological exposure, and temporal factors, while risk perceptions and investor behavior further reinforce these relationships. Taken together, the findings highlight that ESG positioning is truly determined by a wide rrange of factors, supporting the broader argument that ESG investing reflects both financial and non-financial dynamics.

5. Conclusion

ESG investing has become an increasingly important topic in financial markets, influencing both investment strategies and the positioning of financial products. In this study, we have therefore examined the determinants of how exchange-traded fund (ETF) products are positioned as ESG-oriented within global markets, with a particular focus on both market-based and behavioral factors. Specifically, our analysis highlights that, in the case of ETFs as composite investment vehicles, ESG positioning is not understood solely through the traditional environmental, social, and governance pillars, but is also shaped by product-specific and market-related characteristics.

The empirical analysis revealed that several key characteristics significantly influence ESG positioning. In particular, assets under management, technology sector exposure, and fund inception period emerged as the most important determinants. Larger ETFs were found to have a positive and statistically significant effect at the 10% level, with larger ETFs exhibiting approximately 67.5% higher odds of being classified as ESG-oriented. Technology sector exposure proved to be a statistically significant determinant at the 5% level, with funds more exposed to technology showing approximately 38.7% higher odds of ESG positioning, highlighting the structural and narrative advantages associated with technology-intensive portfolios. Similarly, the effect of fund inception year was statistically significant at the 5% level, indicating that newer ETFs are approximately 55% more likely to be ESG-oriented, consistent with the growing importance of sustainability considerations in recent years. In addition to these primary factors, other variables such as volatility and returns also demonstrated partial explanatory power, whereas in contrast, expense ratios and geographic exposure did not appear to be statistically significant determinants in this context. From a behavioral perspective, the findings were interpreted in the sense that ESG positioning is not driven solely by objective sustainability characteristics, but also reflects investor preferences, market trends, and perception biases. In particular, demand for large, technology-oriented, and seemingly stable investment products appears to reinforce their classification as ESG, highlighting the role of non-financial motivations in shaping investment outcomes.

Despite the presented results, the research is subject to several limitations. First, the analysis relies on cross-sectional data, which limits the ability to capture dynamic changes in ESG positioning over time. Future research could thus employ time series or panel data approaches to better understand temporal developments and causal relationships. Furthermore, the presented analysis identifies only statistical associations rather than causal relationships. The potential endogeneity between fund characteristics and ESG positioning, particularly regarding fund size, should

therefore be considered. For example, larger funds may become more ESG-oriented due to stronger investor demand, while ESG-oriented products may simultaneously attract greater capital inflows. Future research could address this issue through more advanced econometric approaches, such as instrumental variable techniques, panel data models with fixed effects, or quasi-experimental research designs, which would allow for a more rigorous examination of causal mechanisms. Another limitation relates to the set of explanatory variables included in the model. Although the analysis incorporates several important ETF characteristics, additional financial risk factors may explain part of the variation in ESG positioning. In particular, established asset pricing factors, such as value and size premiums represented by Fama-French risk factors, could potentially capture differences in portfolio characteristics that are not fully reflected by the included variables. Incorporating these factors would present a valuable extension of the current framework, but their inclusion requires extensive additional data availability and methodological adjustments. The insignificance of geographic exposure might also suggest that further research is needed to explore regional differences in ESG positioning, potentially using more detailed country-level variables. Finally, while this study incorporates a behavioral perspective indirectly, future research could apply experimental or survey-based methods to directly examine investor behavior related to ESG investing.

Nonetheless, the research contributes to literature on sustainable finance in a valuable way by identifying key determinants of ESG positioning in ETF markets. Importantly, the presented findings demonstrate that factors beyond the traditional environmental, social, and governance pillars—such as repeatedly highlighted factors of fund size, sector composition, and market dynamics—play a crucial role in shaping ESG classification. From a more practical perspective, the identified determinants also provide useful predictive insights regarding the likelihood that an ETF will be classified as ESG-oriented. Understanding the role of fund size, sector exposure, and fund age can support investors in evaluating ESG characteristics of investment products, assist portfolio managers in designing and positioning sustainable financial products, and provide product developers with insights into market factors associated with ESG demand. These findings are particularly relevant in the European context, where ESG considerations have been strongly embedded in regulatory frameworks and investment practices over recent years. The European market is characterized by a comparatively high emphasis on sustainability standards and disclosure requirements, which further amplifies the importance of correctly understanding ESG positioning. At the same time, especially investors in Central Europe tend to rely more heavily on collective investment vehicles such as ETFs rather than active stock selection, making the role of ETF characteristics especially influential in shaping perceived sustainability. The

presented results thus provide meaningful implications for European investors and policymakers.

Taken all together, findings of this research paper therefore can offer valuable insight for a wide spectrum of investors, portfolio managers, and financial product designers seeking to better understand the drivers of ESG investment positioning in an increasingly sustainability-oriented financial environment.

Literature

Bednárová, M. & Soratana, K. (2025). *Environmental, Social, and Governance (ESG) Investment and Reporting*. Cham: Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-84235-1

Berg, F., Kölbel, J. F. & Rigobon, R. (2022). Aggregate confusion: The divergence of ESG ratings. *Review of Finance*, 26(6), p. 1315–1344. https://doi.org/10.1093/rof/rfac033

Black, A. J. & Kölbel, J. (2024). Pricing Differentiated Funds: The Puzzle of ESG Fund Fees. *Swiss Finance Institute Research Paper Series*, 24-109. https://doi.org/10.2139/ssrn.5053459

Bloomberg. (2026). *Markets Data*. Available at: https://www.bloomberg.com/markets

Boffo, R. & Patalano, R. (2020). *ESG Investing: Practices, Progress and Challenges*. Paris: OECD. Available at: https://www.oecd.org/content/dam/oecd/en/publications/reports/2020/09/esg-investing-practices-progress-and-challenges_8a73d683/b4f71091-en.pdf

Chau, L., Anh, L. & Duc, V. (2025). Valuing ESG: How financial markets respond to corporate sustainability. *International Business Review*, 34(3), 102418. https://doi.org/10.1016/j.ibusrev.2025.102418

Christensen, H. B., Hail, L. & Leuz, C. (2021). Mandatory CSR and sustainability reporting: Economic analysis and literature review. *Review of Accounting Studies*, 26, p. 1176–1248. https://doi.org/10.1007/s11142-021-09609-5

de Jong, M. & Rocco, S. (2022). ESG and impact investing. *Journal of Asset Management*, 23, p. 547–549. https://doi.org/10.1057/s41260-022-00297-7

DellaVigna, S. (2009). Psychology and economics: Evidence from the field. *Journal of Economic Literature*, 47(2), p. 315–372. https://doi.org/10.1257/jel.47.2.315

Derwall, J., Koedijk, K. & Ter Horst, J. (2011). A tale of values-driven and profit-seeking social investors. *Journal of Banking & Finance*, 35, p. 2137–2147. https://doi.org/10.1016/j.jbankfin.2011.01.009

Florio, C., Panfilo, S. & Fiandrino, S. (2025). ESG performance, corporate governance mechanisms, and ESG risk rating: Evidence from Europe. *Series in Accounting and Business Administration*. Cham: Springer, p. 201–223. https://doi.org/10.1007/978-3-031-76618-3_10

Friede, G., Busch, T. & Bassen, A. (2015). ESG and financial performance: Aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment*, 5 (4), p. 210–233. https://doi.org/10.1080/20430795.2015.1118917

Galeone, G., Gianfrancesco, I., Ranaldo, S. et al. (2025). Exploring the relationship between ESG score and systematic risk in the European stock market. *Journal of Management and Governance*. https://doi.org/10.1007/s10997-025-09761-z

Gebauer, L., Kreuzer, C. & Schmidhammer, C. (2026). Sustainability in calm and rough waters: An empirical investigation of European ESG ETFs. *Journal of Asset Management*, 27 (4). https://doi.org/10.1057/s41260-025-00436-w

Giese, G., Lee, L.-E., Melas, D., Nagy, Z. & Nishikawa, L. (2019). Foundations of ESG investing: How ESG affects equity valuation, risk, and performance. *The Journal of Portfolio Management*, 45(5), p. 69–83. https://doi.org/10.3905/jpm.2019.45.5.069

Infante, J., Curto, T., & Arenas, C. (2025). The Impact of Fund Characteristics on Environmental, Social, and Governance (ESG) Risks: An Empirical Analysis. *Asian Business Research Journal*, 10(3), 33–44. https://doi.org/10.55220/25766759.305

Ioannou, I. & Serafeim, G. (2012). What drives corporate social performance? The role of nation-level institutions. *Journal of International Business Studies*, Harvard Business School, 43(9), p. 834–864. https://ssrn.com/abstract=1661925

Katsampoxakis, I., Griva, A. & Xanthopoulos, S. (2026). ESG investments: A study of their role in risk management and sustainable economic growth. *Journal of the Knowledge Economy*. https://doi.org/10.1007/s13132-026-03237-7

Khan, M., Serafeim, G. & Yoon, A. (2016). Corporate sustainability: First evidence on materiality. *The Accounting Review*, 91 (6), p. 1697–1724. https://doi.org/10.2308/accr-51383

Lozano, M. B. & Martínez-Ferrero, J. (2022). Do emerging and developed countries differ in terms of sustainable performance? Analysis of board, ownership and country-level factors. *Research in International Business and Finance, 62*, 101688. https://doi.org/10.1016/j.ribaf.2022.101688

Lukács, B. & Molnár, P. (2025). Companies' ESG performance under soft and hard regulation environment. *Discover Sustainability*, 6, 701. https://doi.org/10.1007/s43621-025-01657-0

Morrissey, B. & Kleiman, G. (2025). A Changed World: ESG/Sustainable/New Tech Investment Trends. *Emerging Economies and Financial Markets*. Cham: Palgrave Macmillan. https://doi.org/10.1007/978-3-031-85669-3_7

Mottaghi, M., et al. (2023). A deep comprehensive model for stock price prediction. *Journal of Ambient Intelligence and Computing*. https://doi.org/10.1007/s12652-023-04653-2

MSCI. (2026). *ESG Fund Ratings*. Available at: https://www.msci.com/data-and-analytics/sustainability-solutions/esg-fund-ratings

Ortez, M. A., Smith, M. L. & Widmar, N. O. (2026). U.S. Public Perceptions of Environmental, Social and Governance (ESG) Investments. *Journal of Consumer Policy*, 49, 5. https://doi.org/10.1007/s10603-025-09609-x

Pasquino, M. & Lucarelli, C. (2025). Socially responsible investments inside out: a new conceptual framework for investigating retail investor preferences. *International Journal of Bank Marketing*, Vol. 43 No. 3 pp. 449–475. https://doi.org/10.1108/IJBM-02-2024-0077

Pástor, Ľ., Stambaugh, R. F. & Taylor, L. A. (2021). Sustainable investing in equilibrium. *Journal of Financial Economics*, 142(2), p. 550–571. https://doi.org/10.1016/j.jfineco.2020.12.011

Renneboog, L., Ter Horst, J. & Zhang, C. (2008). Socially responsible investments: Institutional aspects, performance, and investor behavior. *Journal of Banking & Finance*, 32(9), p. 1723–1742. https://doi.org/10.1016/j.jbankfin.2007.12.039

Rompotis, G. G. (2022). The ESG ETFs in the UK. *Journal of Asset Management*, 23, p. 114–129. https://doi.org/10.1057/s41260-021-00251-z

Serafeim, G. (2020). Social-impact efforts that create real value. *Harvard Business Review*, 98(5), p. 38–48. Available at: https://hbr.org/2020/09/social-impact-efforts-that-create-real-value

Seth, S. a Das, E. (2026). The "green" trend: A sagacity of mass media hysterics in making sustainable products into lucrative icons. *Green to Gold*. Cham: Springer Nature Switzerland. https://doi.org/10.1007/978-3-032-10212-6

Soratana, K. (2025). Environmental Factors in ESG Investing', in Bednárová, M. a Soratana, K. (eds.) *Environmental, Social, and Governance (ESG) Investment and Reporting*. Cham: Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-84235-1_2

Taddeo, S., Regoli, A., Weber, O. & Carè, R. (2026). Green talk, costly walk: The financial cost of greenwashing. *Business Strategy and the Environment*. https://doi.org/10.1002/bse.70595

Vu, T. N., Lehkonen, H., Junttila, J.-P. & Lucey, B. (2025). ESG investment performance and global attention to sustainability. *The North American Journal of Economics and Finance,* 75, 102287. https://doi.org/10.1016/j.najef.2024.102287

Wang, L. & Yang, H. (2024). Digital technology innovation and corporate ESG performance: Evidence from China. *Economic Change and Restructuring*, 57 (3), 207. https://doi.org/10.1007/s10644-024-09791-x

Wijeweera, A., Kortt, M.A. & Kim, N. (2026). Dissecting ESG: Do environmental, social, and governance pillars influence share returns differently? *Research in International Business and Finance*, 81, 103210. https://doi.org/10.1016/j.ribaf.2025.103210

Yahoo Finance. (2026). *ETF and market data*. Available at: https://finance.yahoo.com/

Zeidan, R. (2025). ESG investing. *The Green Banking Transition Manual*. Singapore: Palgrave Macmillan. https://doi.org/10.1007/978-981-96-2852-0_4

Zhao, C., Wang, Z., Tang, Y. & Yang, F. (2025). ESG performance, green technology innovation, and corporate value. *Alexandria Engineering Journal*, 123 (1), p. 369–380. https://doi.org/10.1016/j.aej.2025.03.097