Current Global ESG Investment Products and Their Performance Implications

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Abstract: This article aims to research the current global offering of environmental, social and governance (ESG) investment products and assess their impact on financial performance. Through the method of systematic literature review and secondary cross-sectional research of market data, we analyzed the current availability, geographical structure, and volume of ESG investments, while using scatterplot and correlation analysis we also measured its impact on performance. As part of the results, the regions of the United States of America and Europe, with particular emphasis on the Netherlands, were identified as the most active ESG markets. At the same time, a positive dependence with coefficient $\beta 1 = 0{,}517$ was found between the ESG rating of the 100 largest ESG ETF funds and their 5-year accumulated performance. The research results thus represent valuable knowledge for investors, asset managers and policy makers who can utilize the integration of ESG principles in their investment strategies.

Keywords: ESG investment, green investing, investment products, portfolio management, sustainable finance

JEL Classification codes: G11; Q01; Q51

INTRODUCTION

In the midst of the 21st century, the global spotlight shines intensely on the imperative for sustainability and environmentally conscious solutions. Countries such as Canada, Japan, and the United Kingdom have already initiated policy changes, illuminating the adverse repercussions of fossil fuel emissions on the environment. The landmark Paris Agreement, a milestone international treaty signed in 2015, embodies a collective commitment to curbing global warming and limiting temperature rise to below 2 or even 1.5 degrees Celsius (Hoegh-Guldberg et al., 2018).

To address this monumental challenge of climate change, a dual transformation is necessary: reshaping our lifestyles, while at the same time mobilizing substantial capital. This pivotal commitment has therefore given space to the emergence of financial instruments known as green, ESG, or sustainable investments, which will be the focus of this article.

In this context, it is crucial to note that financial institutions are increasingly introducing these types of investment products, resonating with a surge in investor preferences favoring sustainability. This shift thus is not limited to merely consumer behavior; it is becoming ingrained in investment strategies, as investors seek ethically sound and sustainable

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alternatives to allocate their capital. As such, understanding the current offering and characteristics of these evolving investment vehicles and their potential impact on financial performance assumes paramount significance, not exclusive only to the investors themselves, but also to the globally operating corporations, regulators or policymakers, government representatives and ultimately the society as a whole.

1 LITERATURE REVIEW

Sustainable finance is a relatively recent innovation that offers an alternative method of financing to individuals, corporations, and governments willing to finance and invest in green or low-carbon activities (Huang et al., 2019). One of its components is the ESG investments themselves, which take into account the three pillars of environmental (E), social (S), and governance (G) principles when selecting assets.

Typical problems related to 'E' - environmental are energy consumption, pollution, climate change, produced waste, water scarcity, biodiversity, and deforestation (Nishikawa et al., 2021). Secondly, related to 'S' - social are human rights, child and forced labor, community engagement, stakeholder relations, health and safety, employee engagement, customer satisfaction, gender equality, and diversity (Chen, 2022). When it comes to 'G' - governance, the quality of the board and management, as well as the remuneration of executives and the board, transparency and disclosure, audit, lobbying, or political contribution are adequate examples of its content (Kapitánová, 2021).

In a simplified way, the term ESG investing can be defined as investing that prioritizes optimal environmental, social, and governance (ESG) factors or results in addition to profit maximization (Hill, 2020). King and Pucker from Harvard Office for Sustainability (2022) also stated that, in a holistic way, it is a concept that helps investors choose how an organization manages risks and opportunities related to environmental, social, and governance criteria.

Following the term definition and three-pillar structure of the concept of ESG, we are further faced with the key question of how to identify whether an investment or financial product meets the ESG criteria. Most international public (as well as private) companies are evaluated for their environmental, social, and governance performance based on third-party ESG ratings. However, reporting and rating methodology, scope, and coverage vary widely between rating providers (La Torre et al., 2023).

One of the certainly most widespread types of ESG rating is currently the MSCI ESG Research Rating, which is awarded annually by the American company Morgan Stanley Capital International (MSCI). It assigns investment scores from zero to ten, with 10 indicating a high level of ESG risk management and no exposure to this risk, while 0 represents low risk management efficiency and therefore very high-risk exposure due to non-fulfillment of ESG criteria (Lykkesfeldt & Kjaergaard, 2022).

Tab. 1 Categorization of companies according to S&P Global ESG rating

Group	Alphabetical order	Percentile	Numerical score
Positive	AA	>0,8	80-100
Neutral	AB	>0,6	60-80
Moderately negative	B	>0,4	40-60
Negative	BC	>0,2	20-40
Strongly negative	C	>0,0	0-20

Source: Own processing according to the S&P Sustainable 1 Solutions

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The second popular measure of ESG assessment is the S&P Global ESG Score, which is regularly published by the world-renowned rating agency Standard & Poor's Global (S&P). As stated by the rating company in its internal methodology, the primary objective of this score is to measure the overall sustainability value of a company compared to its industry competitors (Agazzi & Green, 2020). This ESG score is measured on a scale from 0 to 100, where 100 represents the maximum score that can be achieved. S&P ESG scores are designed to be read as percentiles. A score of 70 means that the company has a better score than 70% of the companies in the given industry, which we can further see in more detail in its rating manual shown in Table 1.

In addition to ESG assessment in the context of the fulfillment of sustainability criteria by individual companies in which investors invest, it is also possible to examine the ESG assessment of the countries in which the given investments and companies are domiciled. Such an ESG assessment at the country level is provided by the Swiss investment company Robeco Schweiz SAM, which introduced a sustainability services division in 2006, providing companies with reports on sustainability benchmarking, and in 2001, the then RobecoSAM also became the first carbon neutral company in Switzerland (Agazzi & Green, 2020).

The ESG concept described so far, as well as ESG investments related to it, continue to expand worldwide, as a result of which more and more financial products are available under the ESG label. First of all, ESG bonds, often called "green" or "social" bonds, are the most common form of ESG lending on the market. Such bonds make it possible to direct money towards specific uses and projects focused on environmental, climate or social outcomes (Ning & Sial, 2023). So far, the most popular ESG assets currently remain ESG equity products, representing the shares of companies that focus on sustainability and environmental interests rather than simply increasing their financial assets in isolation. Their goal is therefore to still profit, but with a minimal impact on the environment (Leleux & Van der Kaaij, 2019). At the same time, it contains numerous big names including Apple (AAPL), Microsoft (MSFT), Nvidia (NVDA), Pepsi (PEP), Adobe (ADBE), Intel (INTC), Verizon (VZ), Cisco Systems (CSCO) and many others (Pineiro et al., 2019).

In addition to the above-mentioned ESG financial products, new innovations related to this issue regularly appear on the financial markets. For example, a bond linked to sustainability, which combines the reported characteristics of an ESG bond with a fixed income product, has been gaining popularity recently (Ferreira, 2022). Other financial products such as the German Schuldscheine, a medium to long-term bond product that does not need to be listed on a stock exchange, also exist in an ESG format (Bayern LB, 2024). And as investors are increasingly interested in ESG, it is expected that CLOs (Collateralized Loan Obligation) with negative screening against oil, gas or large tobacco companies will also become more popular (Deutsche Bank, 2022).

As for the literary coverage of the impact of the ESG factor on the profitability of ESG investments, based on the analysis of studies carried out in the past, we can conclude that in theory prevails the opinion about the positive impact of ESG on profitability, in other words, that ESG investments on average achieve a higher return compared to the benchmark. One of the main publications on this issue was published by a collective of authors consisting of Pástor, Stambaugh and Taylor, which was published in 2021 as part of the annual edition of the Journal of Financial Economics. According to their constructed model of two companies with a contrasting focus on ESG issues, it was proven that shares of companies with an emphasis on fulfilling ESG principles yielded higher returns than those that downplay ESG principles. This excess return is subsequently referred to as "greenium" in publications because it is driven solely by investors' preferences for green energy and ESG thinking. Derwall et al. (2005) previously similarly analyzed two portfolios of stocks with high and low ratings in the field of ecological efficiency. Through research, they found that the high-rated portfolio generated

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higher average monthly returns than the low-rated portfolio between 1995 and 2003. The performance difference between the two portfolios was 5.06% per year over the entire period after controlling for risk factors. At the same time, the approach of the American professor from Yale University, Robert Shiller, who reacts from the point of view of behavioral finance, is also important, noting that ESG investors would even be willing to accept lower monetary returns in the long term, as they get an additional good feeling from a higher ESG score (Shiller, 2019).

However, in addition to these mentioned positive effects of the ESG concept, multiple economists who view ESG more skeptically have emerged. Probably the most famous critic of the idea of sustainability is Milton Friedman, the main representative of the monetarists, who appears as the author of the well-known statement: "The only social responsibility of a company is to increase its profit" (Friedman, 1970). Other shortcomings of the ESG concept include aspects such as greenwashing and superficiality of ESG (Netto, 2020) or the difficulty of measuring and determining ESG ratings (Nakajima & Hamori, 2021). Orsato et al (2007) studying all ESG funds worldwide from 1991 to 2007 also offered findings of an opposite negative effect of ESG on financial performance, arguing that investors pay an additional price for ethics and sustainable corporate governance. However, due to their outdated observation period, it is necessary to repeat such analysis for the period of recent years of rapid growth of interest in green finance, which will be realized within this article.

2 METHODOLOGY

The primary approach utilized in this article consists of a simplified systematic review, complemented by secondary cross-sectional research focusing on market data and reports. The main goal was to comprehensively analyze the current landscape of Environmental, Social, and Governance (ESG) investment product offerings on the global financial markets. The methodological framework therefore involved a multi-step analysis focused on evaluating and conducting an ascending ranking of ESG rating value, investment volume, regional structure and types of ESG investment products currently available at global markets.

This secondary cross-sectional research phase involved the collection and analysis of market data and reports from various reputable sources such as S&P Global, ROBECO SAM, Morningstar, Global Sustainable Investment Alliance, Statista, or Harvard Forum of Corporate Governance.

To test the hypothesis proposed in the literature regarding a potential positive effect of ESG factors on financial performance, a quantitative analysis methodology was also adopted. The study utilized scatter plot graphical analyses and regression technique using the calculation of Pearson correlation coefficient (r) to properly explore the correlation between ESG factors and the 5-year cumulated annual performance of selected investment products. This statistical approach aimed to ascertain the strength and direction of the relationship between ESG factors and financial performance of particular asset class of ESG investment.

$$\boldsymbol{r} = \frac{n * (\sum(X,Y) - (\sum(X) * \sum(Y)))}{(n * \sum(X^2) - \sum(X)^2) * (n * \sum(Y^2) - \sum(Y)^2)} \quad (1)$$

$$\boldsymbol{r} = \frac{\sum(x_i - \bar{x}) * (y_i - \bar{y})}{\sum(x_i - \bar{x})^2 * \sum(y_i - \bar{y})^2} \quad (2)$$

Where:

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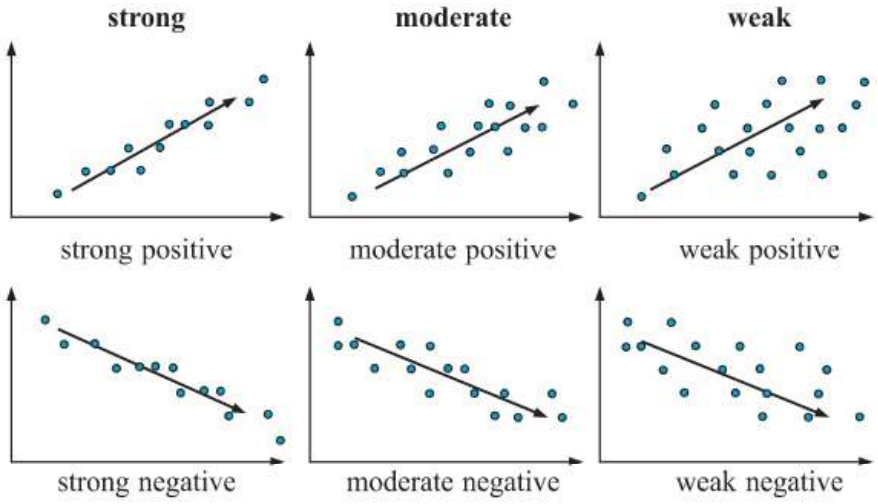
r = Pearson correlation coefficient

n = number of observations

In order to fully achieve this goal, in addition to the literary and quantitative form of research, scientific methods such as analysis, synthesis, abstraction, deduction and comparison were subsequently used, with the aim of creating a comprehensive view of the issue and interlinking the individual parts of the conducted research.

Fig. 1 Graphic representation of the strength of correlation



Source: I. Cohen, 2009, p.17

3 RESULTS AND DISCUSSION

Our analysis of ESG investment products revealed a diverse spectrum of ESG products in global markets. Utilizing data from reputable ESG rating agencies, such as S&P Global, ROBECO SAM, Morningstar, Global Sustainable Investment Alliance, Statista, or Harvard Forum, a pattern of varying ESG scores and characteristics emerged. The distribution of these highlights the heterogeneous nature of ESG products.

3.1 ESG rating ranking

By summarizing the published ratings from the Swiss agency RobecoSAM and MSCI ESG Research, we can create a ranking according to the calculated quality indicator of sustainable portfolio management. This indicator, as an aggregate representing country sustainability of government bond investments, allows to identify countries in which there is the best ability to lead ESG-tuned portfolios.

As we can see in Table 2, currently, European countries lead the ranking in ESG investment practices. The Netherlands stands out as the most sustainable stock market in the world. Meanwhile, France managed to overtake Scandinavian countries known for their inclination towards sustainability issues in 2019, due to large companies such as luxury goods firm LVMH and electrical equipment supplier Schneider Electric, both of which are classified as highly ESG oriented. Finland is in third place thanks to companies such as Nokia, a leader in the global technology hardware industry. At the same time, just a few months ago, the Finnish parliament

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approved a proposal to achieve climate neutrality by 2030, i.e., two decades earlier than the European Union plans, which aim to be climate neutral by 2050 (Sauli, 2022).

Tab. 2 Ranking of countries according to ESG rating

Rank	Country	ESG score	E (20% weight)	S (30% weight)	G (50% weight)
1.	Netherlands	**9,7**	9,33	9,91	9,37
2.	France	**9,5**	9,47	9,47	9,64
3.	Finland	**9,3**	9,35	9,47	9,29
4.	Hong Kong	**9,3**	9,33	9,01	9,89
5.	Taiwan	**9,3**	8,71	9,10	9,53
6.	Iceland	**9,1**	8,55	9,33	9,01
7.	Sweden	**8,7**	8,51	8,55	8,73
8.	Germany	**8,7**	8,53	8,76	8,55
9.	Canada	**8,5**	8,53	8,49	8,51
10.	Australia	**8,5**	8,65	8,47	8,31
11.	USA	**8,1**	7,99	8,11	8,70

Source: Own processing according to the ROBECO Country Sustainability Ranking 2021 Morningstar Sustainability Atlas

The United States is in the 11th place because, on the one hand, companies such as Apple, Microsoft, Berkshire Hathaway and Visa are considered leaders in terms of sustainability, but on the other hand mainly social risks faced by equally big names such as Facebook, Amazon and Johnson & Johnson are classified as "high", which can be attributed in most cases to companies' involvement in controversial disputes (Ferri, 2023).

3.2 Invested volume

Along with the above-mentioned evaluation of countries with the most suitable environment for ESG investments, it is also important to consider the invested volume into these types of investments in each country since the suitability of the environment for their management may not automatically guarantee the motivation of investors to allocate their capital to them.

According to data compiled from the Global Sustainable Investment Alliance database, total global sustainable investment reached $35.3 trillion USD at the start of 2022 across the five major markets included in our analysis, representing a 15% increase over 2 years. Reported sustainable investment assets under management already make up 35.9% of total managed assets.

Tab. 3 Global holdings of ESG assets by country from 2018 to 2022

Region	ESG invested volume (tn. USD)			Annual growth (%)	
	2018	2020	2022	2018-2020	2020-2022
Europe	12,04	14,07	12,01	17%	-11%
USA	8,73	11,9	17,09	36%	43%
Canada	1,09	1,71	2,43	57%	45%
Australia	0,51	0,73	0,91	43%	25%
Japan	0,47	2,17	2,97	430%	37%
Total	22, 9	30,7	35,31	35%	15%

Source: Own processing based on data from the Global Sustainable Investment Alliance

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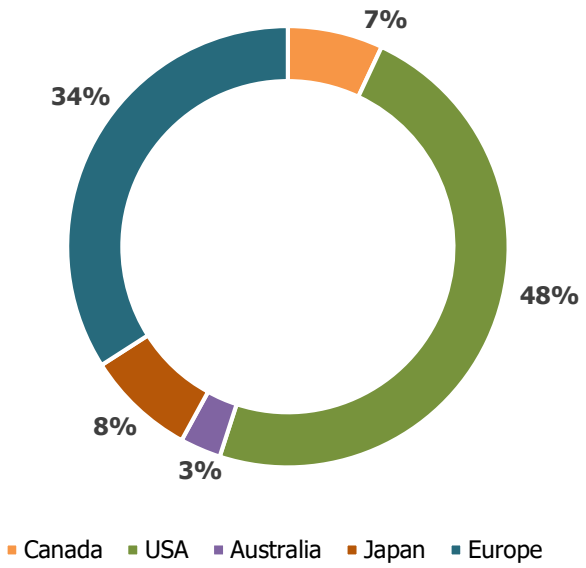
3.3 Regional structure

As for regional representation, from both Table 2, as well as Figure 2, can be seen that in 2022 the largest traded volume of ESG investments was achieved by the United States at the level of 17 trillion USD, followed by Europe with approximately 12 trillion USD. Within the ranking, these are the two sovereign largest markets with ESG investments in absolute terms, as Canada reached the third largest volume of ESG investments at the level of just under 2.5 trillion USD.

Fig. 2 Percentage distribution of investment assets between regions



Source: Own processing based on data from the Global Sustainable Investment Alliance

Sustainable investment assets show a constantly growing trend worldwide, with the exception of Europe, which indicates a decrease in the last reported period, but this is mainly due to a change in the regulatory definition, which may result in the fact that not all products previously considered ESG products today meet the new definitions. As Table 3 further notes, the largest increase over the past two years under review was in Canada, where assets under sustainable management increased by more than 45%. The United States followed closely behind Canada with a 42% increase and Japan with a 37% increase.

Thus, the United States and Europe continue to account for more than 80% of global sustainable investment assets between 2020 and 2022. Despite the fact that the United States is the largest investor market in the world, in case of environmental, social and governance (ESG) investments they have been lagging Europe for several years. The delay is clearly not caused by a lack of interest in ESG. Indeed, a 2023 survey by asset management company Schroders showed that more than 60 percent of Americans agree that investment funds should consider sustainability factors, with this interest being even higher among young investors. The slower development of the phenomenon of sustainable investments in the USA is thus probably mainly caused by insufficient reporting standardization and political "Please remember the following text: Restrictions in the field of ESG investing."

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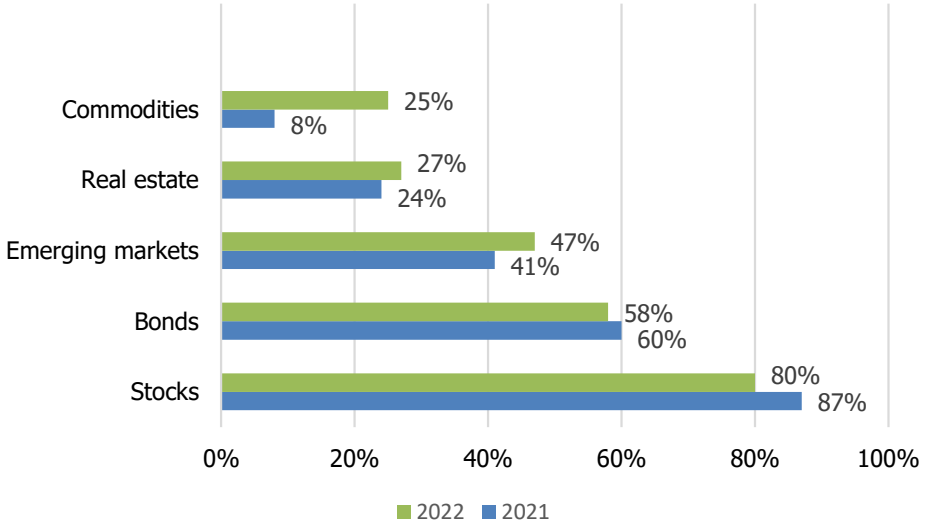
3.4 Product types

Following the geographic concentration, it is crucial in our analysis to also include the distribution among the different types of ESG assets that global investors prefer. Since the end of last year, investors have been looking for alternative investments to solve the problem of energy dependence and inflation, which is until today historically higher in the US and the Eurozone. According to a scientific study from the Harvard University called ESG Global Study 2022 led by Professor Jessica Ground, stocks (80%) and bonds (58%), as can also be seen in Figure 3, remain the most popular asset class for gaining exposure to ESG among global investors. This furthermore presents justification for the reason why in the next part of the research, we will focus precisely on the quantitative analysis of ESG stock assets.

Fig. 3 Types of investment assets to gain exposure to ESG in 2021 and 2022



Source: Own processing based on the Harvard Forum of Corporate Governance - ESG Global Study 2022

However, in 2022, investors also increased their use of real estate (27% vs. 24%) and especially commodities (25% vs. 8%), primarily with the same chemical composition as their non-green equivalents but produced by environmentally neutral methods. This suggests a greater appetite for inflation-linked assets. While inflation has been rising since 2021 as economies gradually eased pandemic measures causing shortages within the supply chain, the crisis in Ukraine has further accelerated this trend. Along with these, emerging markets are also becoming a popular way to gain exposure to ESG (36% vs. 28%). This may indicate that some investors already see ESG in developed markets as an oversaturated space and are therefore looking for other untapped idiosyncratic opportunities.

Just as importantly, it should also be noted that ESG has historically been a relatively expensive instrument to include in a portfolio, until the emergence of Exchange Traded Funds (ETF). Today, through ETFs, investors can gain broad exposure to ESG at a much lower cost and in a significantly more liquid, faster and more tax-efficient manner (Meziani, 2016). As a result, there are currently several ESG-focused ETFs on the market through well-known issuers such as BlackRock or Vanguard. The specific list of the largest ESG-tuned ETF investments is captured in Table 4 above.

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Tab. 4 List of the world's largest ESG ETFs by asset value in 2022

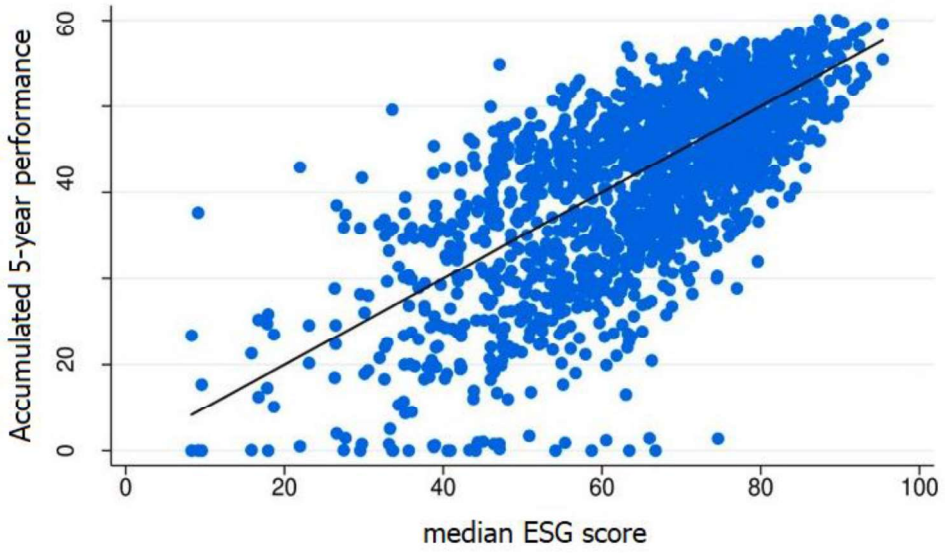
Rank	Name of ESG ETF fond	Value of assets under management (mil. USD)
1.	SPDR Bloomberg U.S. Corporate ESG UCITS ETF	6 750
2.	iShares ESG MSCI EM ETF	6 513
3.	Vanguard ESG US Stock ETF	6 115
4.	Xtrackers MSCI USA ESG UCITS ETF - 1C - Acc	5 044
5.	iShares MSCI World SRI UCITS ETF - EUR - Acc	4 970
6.	iShares MSCI EM SRI UCITS ETF – Acc	3 795
7.	Mirae Asset TIGER China Electric Vehicle Solactive ETF	2 848
8.	UBS Lux Fund Solutions - MSCI USA Socially Responsible UCITS ETF (USD)	2 451
9.	iShares MSCI EM IMI ESG Screened UCITS ETF - Acc	1 999
10.	iShares ESG US Aggregate Bond ETF	1 997

Source: Own processing according to Statista

3.5 Implications on performance

When displaying the largest 100 ESG ETF funds in relation to their 5-year accumulated yield, a growing trend can be observed, meaning the higher the ESG score, the higher the yield. Graphically, we also recognize the effect of right-sided concentration and clustering next to the trend curve with the highest intensity in the upper right corner, showing that the ETF funds with the highest ESG factor have at the same time the highest 5-year accumulated yield.

Fig. 4 Scatter plot graph of ETF performance dependence on its ESG score



Source: Own processing in Gretl according to data from Statista

The examined dependence can thus be considered positive, which was consequently double confirmed also through the regression matrix with a correlation coefficient at the level of 0.517, as is shown in Table 5. We have therefore been able to successfully verify in 2 ways the moderately positive dependence between the ESG rating and the return on the investment asset, which allows us to confirm our hypothesis based on the previous studies (Pástor et al., 2021; Derwall et al., 2005).

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Tab. 5 Matrix of correlations

Variables	(1)	(2)
(1) accum_5yperf	1.000	
(2) ESG_score	0.517	1.000

Source: Own processing in Gretl according to data from Statista

However, due to the higher degree of dispersion observed from the left side outliers on the scatter-plot dot chart, the results cannot be considered unconditionally relevant. This conclusion indicates the need to make further comparisons within the investment assets on individual level in time, as well as creating a basis for future research improvement, for example, in the form of a complex regression model that would more comprehensively define the investment return function. Such a model could be further extended by control variables of various macroeconomic and microeconomic factors influencing the return on investments, which would eliminate the so-called OVB effect, for which the result could not be corrected in the case of our correlation analysis. Last but not least, it is possible to continue the research through follow-up comparison with non-ESG ETF funds, which would make it possible to objectively quantify the difference in benefits from the ESG instrument.

CONCLUSION

In this article, we focused on analyzing the global offering of Environmental, Social, and Governance (ESG) investment products and identifying their implications on financial performance. Through a comprehensive approach encompassing systematic literature review and secondary research, along with the statistical method of scatter-plot graphing and Pearson regression analysis, it was possible to uncover critical insights into the current state of ESG investing.

As part of the results, the regions of the United States of America and Europe were identified as the most active ESG markets, collectively accounting for over 80% of the market share, with the Netherlands currently dominating as the most sustainable investment market in the world. In the present, the most popular ESG assets are stocks and bonds, which in recent years have also been followed by investments in real estate and ecologically produced commodities, along with ETF funds due to their favorable price.

A pivotal finding from our quantitative analysis revealed a positive correlation effect of 0.517 between the ESG factor and the 5-year cumulative performance among the top 100 ETF funds. This empirical evidence not only aligns with, but also substantiates the hypotheses of other authors, affirming the positive relationship between higher ESG ratings and enhanced financial performance within the ETF segment.

Our contribution to this topic further lies in presenting a concise yet comprehensive review of the global landscape of ESG products, an area that lacks structural availability in the current literature. Additionally, by empirically testing the hypotheses on the newest ranking of ETF funds and 5-year performance leading up to 2023, we were able to enrich the research in this area with the most up to date data available.

Eventually, the positive effect uncovered in our research signifies a promising insight for investors to integrate ESG factors into their portfolios. Moreover, it also emphasizes the importance for the companies and governments to incorporate sustainability aspects into their strategic plans, which allows them to foster a better world for the whole society.

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However, while our study offers valuable insights, there remain areas for further research. Future authors could therefore delve more into the selected markets individually rather than globally, compare the effects of ESG ETFs against non-ESG counterparts, or employ even more complex regression models to mitigate the potential of omitted variable biases (OVB). Such modifications would enhance the precision of analyzing the impacts of ESG factors on investment performance and ultimately contribute to an even more comprehensive understanding of the above all meaningful topic of sustainability.

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