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Key Words: ESG Rating, Stock Return, Real Estate Companies, Sustainability, Corporate Social Responsibility, Stock Market.

Abstract:

This study examines the influence of real estate companies' sustainability efforts on their economic success. For the period from 2017 to 2023, 41 large European real estate companies are examined to determine whether the ESG ratings of the London Stock Exchange Group (Refinitiv) have a significant influence on their relative annual returns. The results show that there is no significant correlation between the ESG ratings on the one hand and the relative returns on the other. This finding is consistent when the ESG ratings are considered in relation to the relative returns of the same year and when they are considered in relation to the relative returns of the subsequent year.

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Introduction

Over the past three to four decades, there has been a growing recognition that companies have a broader social and economic role to fulfill beyond merely satisfying the profit expectations of shareholders. Consequently, there has been an increasing expectation that they fulfill this role. Corporate Social Responsibility (CSR) refers to the social responsibility of companies in terms of sustainable business. In the course of the public debate, the CSR approach has been further differentiated. Three areas of corporate responsibility have emerged: environmental, social and governance (ESG). These are the three areas where action is needed to protect natural environment, ensure social progress and improve governance standards. This is intended to ensure the continued development and prosperity of the global economy.

Meanwhile, companies are facing pressure not only from the public debate. Legislators have also embraced ESG as a meaningful goal and are increasingly requiring companies to meet these standards. For instance, the European Union brought the Corporate Sustainability Reporting Directive (CSRD) into force in January 2023.

As investors increasingly ask about the fulfillment of ESG criteria, ESG rating agencies have emerged. These agencies, such as LSEG (Refinitiv), Ecovadis, Sustainalytics or Inrate, facilitate the comparison of the sustainability efforts of companies, thereby enabling potential investors to assess them in a timely and straightforward manner.

However, there is a certain degree of contention regarding the extent to which the implementation of ESG standards contributes to the economic success of companies.

Literature review

Hong & Kacperczyk (2009) argue that it is not worth following the ESG criteria. Instead, they find that especially companies which make particularly few sustainability efforts are remarkably successful economically. Hoepner & Zeume (2013) and Adamsson & Hoepner (2015) criticize this assessment. They assume that the results of Hong & Kacperczyk (2009) are overlaid by other characteristics of the sample examined and that so-called sin stocks are not systematically more successful economically than other stocks. In contrast, Fabozzi, Ma & Oliphant (2008) support the assessment of Hong & Kacperczyk (2009) with a broad-based empirical study on the success of sin stocks in 21 countries in the period from 1970 to 2007. Fabozzi, Ma & Oliphant (2008) demonstrate that sin stocks outperform the market by approximately 1% per month. Trinks & Scholtens (2017) achieve similar results through the analysis of 1,634 stocks from 94 countries. Their findings indicate that sin stocks achieve far above-

average returns. The significance of the study by Hoepner & Schopohl (2018) remains unclear. The authors interpret their results to mean that there is no evidence that sin stocks generate systematic excess returns. Hvidkjaer (2017) interprets these results differently. He recognizes a clear performance advantage of sin stocks in the data. The studies by Filbeck, Holzauer & Zhao (2014) and Humpfrey & Tan (2014) also find evidence that shares that do not focus on the sustainability aspect generate above-average returns. In contrast, Lobe & Walkshäusl (2016) find no empirical evidence for a positive performance deviation of sin stocks. However, Hvidkjaer (2017) suspects that the period under review (1995-2007) in this study may have been selected in a manner that no evidence of excess returns on sin stocks could be found.

Nevertheless, there is also a number of studies which demonstrate that companies with above-average ESG ratings achieve above-average returns. Kempf & Osthoff (2007) compare the returns of standard shares in the Standard & Poor's 500 Index (S&P 500) and sustainably oriented shares in the Domini Social 400 Index (DS 400) over the period from 1992 to 2004. It can be seen that the returns of sustainable shares are higher. Statman & Glushkov (2009) confirm these results for the period from 1992 to 2007. Borgers, Derwall, Koedijk & ter Horst (2013) challenge these results, suggesting that the findings are only attributable to the period under review. In later periods (from 2004 onwards), this correlation no longer exists. Halbritter & Dorfleitner (2015) confirm the results of Borgers, Derwall, Koedijk & ter Horst (2013), yet identify a significant positive impact of Bloomberg's ESG ratings on the future returns of sustainable companies. The study by Larsen (2016) points in the same direction. His results demonstrate that good ESG ratings from MSCI are associated with above-average returns and below-average volatility of those returns during the period from 2012 to 2016. Humphrey & Tan (2014) find that portfolios with socially responsible investments achieve below-average returns. However, Hvidkjaer (2017) criticizes the portfolio composition and the observation period, which means that the informative value of the results should be regarded as limited. Verheyden, Eccles & Feiner (2016) report an above-average risk-return ratio for ESG-influenced portfolios in the majority of cases.

Derwall, Guenster, Bauer & Koedijk (2005) present evidence for the period from 1995 to 2003 indicating that companies that pay particular attention to environmental protection achieve above-average returns. Edmans (2011) demonstrates that, for the period from 1984 to 2011, at least the criterion of employee satisfaction exhibits a clear correlation with the company's performance. However, the question of causality must be raised here. In successful companies that generate high returns, employees are presumably under less pressure. So perhaps it is not the high employee satisfaction that leads to high returns, but rather high returns that lead to high employee satisfaction. This question must also be addressed to the studies by Edmans (2012), Statman & Glushkov (2009) and Kempf &

Osthoff (2007). These studies similarly highlight the importance of employee relations for company returns.

Chang, Nelson & Witte (2012) show that green investment funds exhibit a recognizable underperformance compared to conventional investment funds on a risk-adjusted basis. In contrast, Durán-Santomil, Otero-González, Correia-Domingues & Carlos (2019) reached an opposite conclusion regarding European equity during the period between 2016 and 2018. Their analysis was guided by Morningstar's sustainability rating. Capelle-Blancard & Monjon (2014) demonstrate through an analysis of 116 French socially responsible investment (SRI) funds from 2001 to 2007 that SRI funds do not outperform the market, regardless of the performance indicator considered.

It has been shown that announcements of increased ESG focus are often met with skepticism by investors, resulting in share price declines (cf. e.g. Fisher-Vanden & Thorburn, 2011; Jacobs, Sinhal & Subramaniam, 2010; Krüger, 2015).

Three comprehensive review articles (Friede, Busch & Bassen, 2015; Clark, Feiner & Viehs, 2015; Hvidkjaer, 2017) recognize, by and large, a favorable impact of increased ESG efforts on corporate performance. Talan & Sharma (2019) present another extensive literature review, but are much more cautious in their assessment of the link between sustainability and returns. A meta-study by Hornuf & Yüksel (2023) indicates that, on average, SRI funds perform neither better nor worse than the market portfolio. In summary, it must be concluded that the empirical evidence for a positive impact of an ESG focus on corporate returns is not yet conclusive.

Research question and hypotheses

This study examines whether a positive impact on returns can be observed for large European real estate companies during the period from 2017 to 2023 as a consequence of their ESG activities. For this purpose, the real estate stocks included in the STOXX Europe 600 Real Estate Index will be analyzed. The study examines whether there is a correlation between the ESG score of LSEG (Refinitiv) on the one hand and the relative return of the real estate stocks in the same year or in the following year on the other hand.

We initially follow the assessments of Derwall, Guenster, Bauer & Koedijk (2005), Kempf & Osthoff (2007), Friede, Busch & Bassen (2015), Clark, Feiner & Viehs (2015), Larsen (2016), Verheyden, Eccles & Feiner (2016), Hvidkjaer (2017) and Durán-Santomil, Otero-González, Correia-Domingues & Carlos (2019). This implies that we expect a positive correlation between the ESG ratings of LSEG (Refinitiv) on the one hand and the relative returns of the considered real estate companies under consideration

on the other hand. By relative return, we mean the annual return of each individual real estate company under consideration minus the annual return of the STOXX Europe 600 Real Estate Index.

Hypothesis 1 is therefore: The correlation coefficient between the ESG ratings and the relative annual returns of the companies under consideration is significantly positive.

Null hypothesis 1 therefore reads: The correlation coefficient between the ESG ratings and the relative annual returns of the companies under consideration is not significantly positive.

Borgers, Derwall, Koedijk & ter Horst (2013) emphasize that the consideration of shareholder interests may not affect current returns, but only future returns. In fact, it is conceivable that investors may need some time to take note of a change in ESG ratings and incorporate it into their portfolio decisions. Consequently, there would be a time lag before the corresponding share price increases would occur. Therefore, we also establish a relationship between the ESG ratings on the one hand and the relative returns in the following year on the other hand.

Hypothesis 2 is therefore: The correlation coefficient between the respective current ESG ratings and the relative annual returns of the respective subsequent year is significantly positive.

Null hypothesis 2 therefore reads: The correlation coefficient between the respective current ESG ratings and the relative annual returns of the respective subsequent year is not significantly positive.

Data and methods

The present study considers the 41 real estate companies that have been included in the STOXX Europe 600 Real Estate Index for at least a few years in the period from 2017 to 2023. In detail, these are the following companies: Aedifica NV, Allreal Holding AG, alstria office REIT AG, Aroundtown SA, Assura PLC, Big Yellow Group PLC, British Land Company PLC, Castellum AB, Cofinimmo SA, Covivio SA, Derwent London PLC, Deutsche Wohnen SE, Entra ASA, Fabege AB, Fastighets AB Balder, Gecina SA, Grand City Properties SA, Inmobiliaria Colonial SOCIMI SA, Klepierre SA, Kojamo Oyj, Land Securities Group PLC, LEG Immobilien SE, Londonmetric Property PLC, LXi REIT PLC, MERLIN Properties SOCIMI SA, Primary Health Properties PLC, PSP Swiss Property AG, Rightmove PLC, Safestore Holdings PLC, Sagax AB, Samhallsbyggnadsbolaget I Norden AB, SEGRO PLC, Swiss Prime Site AG, TAG Immobilien AG, Tritax Big Box Reit PLC, Unibail-Rodamco-Westfield SE, Unite Group PLC, Vonovia SE, Wallenstam AB, Warehouses de Pauw NV, Wihlborgs Fastigheter AB.

For the period from 2017 to 2023, the ESG ratings of LSEG (Refinitiv) are considered alongside the relative return of the companies. The relative return is defined as the share price performance from

the beginning to the end of the year, with profit distributions (dividend payments) also taken into account. In order to consider only the development of returns that are not attributable to positive and negative trends in the stock market segment as a whole, the price development of the Euro Stoxx 600 Real Estate Index is then deducted. This allows for the relative return of the individual shares in relation to the return of all shares in the Euro Stoxx 600 Real Estate Index to be taken into account.

As the index is listed in euros but many of the shares are denominated in other currencies (e.g. British pounds, Swiss francs or Swedish krona), it is essential to make a currency adjustment when determining the returns of the individual shares. The share price performance plus the dividend payment for a year is always converted into euros so that the returns can be meaningfully compared with the euro-denominated Euro Stoxx 600 Real Estate Index.

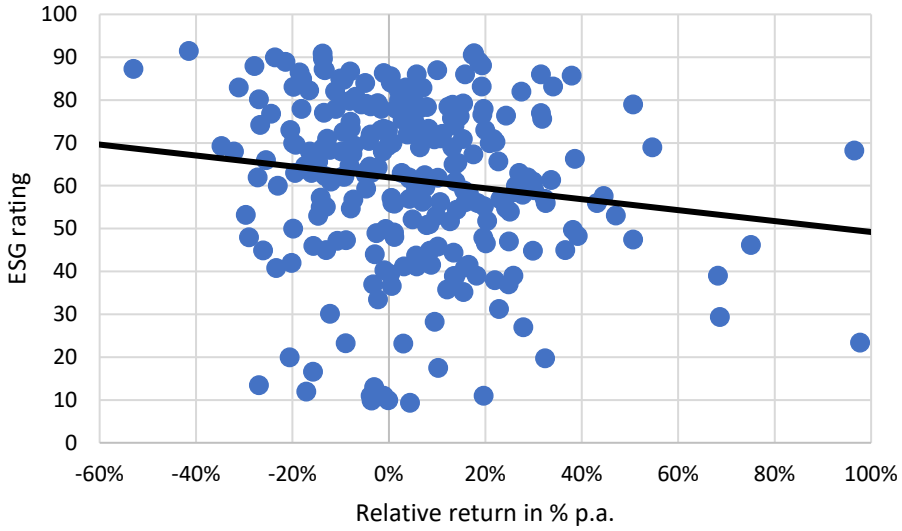
The pairs of values (ESG rating on the one hand and relative annual return on the other) are plotted as a point cloud in a coordinate system and provided with a regression line. The correlation coefficients (r) and the coefficients of determination (R^2) are calculated. Finally, the Spearman test is used to assess the significance of these results (see Spearman, 1904).

Furthermore, the correlation between the ESG ratings and the relative returns of the subsequent year is examined. The correlation coefficients (r) and the coefficients of determination (R^2) are also calculated for these data. Once again, the Spearman test is employed to assess the significance of these results (see Spearman, 1904).

Results

First, the correlation between the respective ESG ratings and the relative returns (share price changes plus dividend payments minus the return of the Euro Stoxx 600 Real Estate Index) in the same year is considered (hypothesis 1). "In the same year" means that the ESG rating of share x in 2017 is set in relation to the relative return of share x in 2017. The same methodology is then applied to the other shares and remaining years. The resulting point cloud yields a regression line with a negative slope (Fig. 1). This indicates that the worse the ESG rating, the higher the relative return of the real estate stocks. However, the observed correlation is relatively weak (Table 1). The correlation coefficient (r) is -0.1195, while the coefficient of determination (R^2) is 0.0143.

Fig. 1: Correlation between ESG ratings and relative returns in the same year from 2017 to 2023



These conditions are essentially also evident when the years 2017 to 2023 are analyzed separately (Tab. 1). In 2017 and 2023, there is a slightly positive correlation between the ESG rating on the one hand and the relative return on the other. In 2018, 2019, 2020, 2021 and 2022, however, there is a negative correlation between the ESG ratings and the relative returns in each case. The point clouds including the regression lines for the years 2017 to 2023 can be found in the appendix.

Tab. 1: Correlation between ESG ratings and relative returns in the same year from 2017 to 2023

Year	Correlation	Correlation coefficient (r)	Coefficient of determination (R^2)	Spearman p-value
2017	positive	0.0966	0.0093	0.7892
2018	negative	-0.2828	0.0800	0.3115
2019	negative	-0.1877	0.0352	0.8541
2020	negative	-0.3286	0.1080	0.0308
2021	negative	-0.1847	0.0341	0.2407
2022	negative	-0.1094	0.0120	0.4927
2023	positive	0.1601	0.0256	0.2005
Total	negative	-0.1195	0.0143	

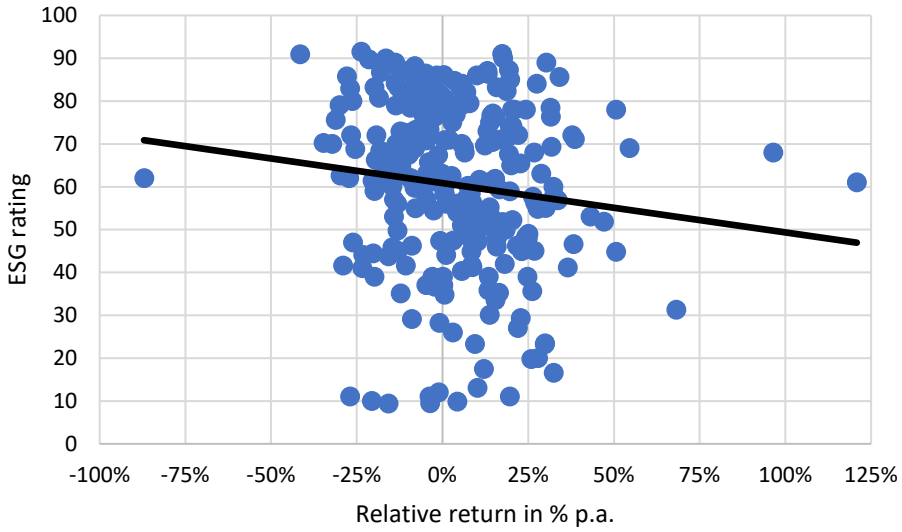
Overall, it is important to note that the coefficients of determination range from 0.0093 to 0.1080. The correlation between ESG ratings on the one hand and relative returns on the other is very weak or, to put it more bluntly, non-existent at all. Even in the most favorable scenario (2020), less than 11% of the variance in relative returns is explained by ESG ratings. For the entire period under review (2017-2023),

less than 1.5% of the variance in relative returns is explained by ESG ratings. This is also reflected in the results of the significance tests. The Spearman test indicates a significant correlation between ESG ratings and relative returns in 2020 only. However, the correlation is negative.

Consequently, null hypothesis 1 cannot be rejected. This means that the correlation coefficient between the ESG ratings and the relative annual returns of the companies under consideration is not significantly positive.

A similar conclusion can be drawn when considering a potential time-lagged effect of ESG ratings on relative returns (hypothesis 2). In this case, the correlation between the respective ESG ratings and the relative returns (share price changes plus dividend payments minus the return of the Euro Stoxx 600 Real Estate Index) in the subsequent year is considered. "In the subsequent year" means that the ESG rating of share x in 2017 is related to the relative return of share x in 2018. The same methodology is then applied to the other shares and remaining years. The resulting point cloud yields a regression line with a negative slope (Fig. 2). This indicates that the worse the ESG rating, the higher the relative return of the real estate stocks in the subsequent year. However, this correlation is only weak (Tab. 2). The correlation coefficient (r) is -0.1177. The coefficient of determination (R^2) is 0.0138.

Fig. 2: Correlation between ESG ratings and relative returns in the following year from 2017 to 2023



Tab. 2: Correlation between ESG ratings and relative returns in the following year from 2017 to 2023

Year	Correlation	Correlation coefficient (r)	Coefficient of determination (R^2)	Spearman p-value
2017	negative	-0.0636	0.0040	0.6431
2018	negative	-0.2828	0.0800	0.1720
2019	positive	0.0285	0.0008	0.9808
2020	negative	-0.4426	0.1959	0.0035
2021	negative	-0.1856	0.0344	0.3784
2022	negative	-0.0279	0.0008	0.9423
2023	positive	0.1502	0.0226	0.4026
Total	negative	-0.1177	0.0138	

These conditions are essentially also evident when the years 2017 to 2023 are analyzed separately (Tab. 2). In 2019 and 2023, it is true that there is a slightly positive correlation between the ESG rating on the one hand and the relative return of the following year on the other. In 2017, 2018, 2020, 2021 and 2022, however, there is a negative correlation between the ESG ratings and the relative returns of the following year in each case. The point clouds including the regression lines for the years 2017 to 2023 are also included in the appendix.

Overall, it is notable that the coefficients of determination range from 0.0008 to 0.1959. The correlation between the ESG ratings on the one hand and the relative returns of the following year on the other hand is relatively weak. Even in the best case (2020), less than 20% of the variance in relative returns is explained by the ESG ratings. For the entire period under consideration (2017-2023), less than 1.5% of the variance in relative returns is explained by ESG ratings. This is also reflected in the results of the significance tests. Only the correlation for 2020 is significant according to the Spearman test. However, it is a negative correlation.

Consequently, null hypothesis 2 cannot be rejected either. This means that the correlation coefficient between the ESG ratings on the one hand and the relative annual returns in subsequent years on the other hand is not significantly positive.

In principle, it is also possible that market participants anticipate future efforts to meet ESG criteria and that these future efforts are reflected in the share price performance in advance. This would not result in a delayed but rather an up-front reaction of the share price performance to future changes in ESG ratings. We have also tested this possibility. However, the results are not significantly different from those obtained for hypotheses 1 and 2 (see Fig. 17 in the appendix). The correlation coefficient

is -0.0861, while the coefficient of determination is 0.0074. This indicates that there is no evidence to suggest that there was an up-front price reaction to future improvements in ESG ratings.

The development of returns of (real estate) companies is undoubtedly a multidimensional phenomenon. It is evident that other factors exert a significantly greater influence on the economic success of companies than their sustainability efforts as reflected in the ESG ratings of LSEG (Refinitiv). Our analysis of 41 large European real estate companies revealed no evidence to support the assumption that a company's willingness to act in accordance with ESG criteria is a key or even an outstanding aspect of a company's economic success in this day and age.

Summary

This study examines the influence of the sustainability efforts of 41 large European real estate companies on their economic success. The sustainability efforts are quantified through the use of the ESG ratings from LSEG (Refinitiv). The economic success of the companies is tracked on the basis of their annual returns. The respective annual return is calculated as the increase in the share price from the beginning to the end of the year plus the dividends paid during the year. In order to avoid distortions due to periods of good and bad economic development in the real estate sector, the annual returns are not calculated in absolute terms, but in relation to the annual return of the Euro Stoxx 600 Real Estate Index.

Our findings indicate that there is no significant correlation between the ESG ratings on the one hand and the relative returns on the other hand. This observation holds true regardless of whether the ESG ratings are related to the relative returns in the same year or in the following year. The notion that corporate success is significantly influenced by sustainability efforts in the contemporary social and political milieu is inaccurate, at least with respect to large European real estate companies during the 2017-2023 period.

Appendix

Fig. 3: Correlation between ESG ratings in 2017 and relative returns in 2017

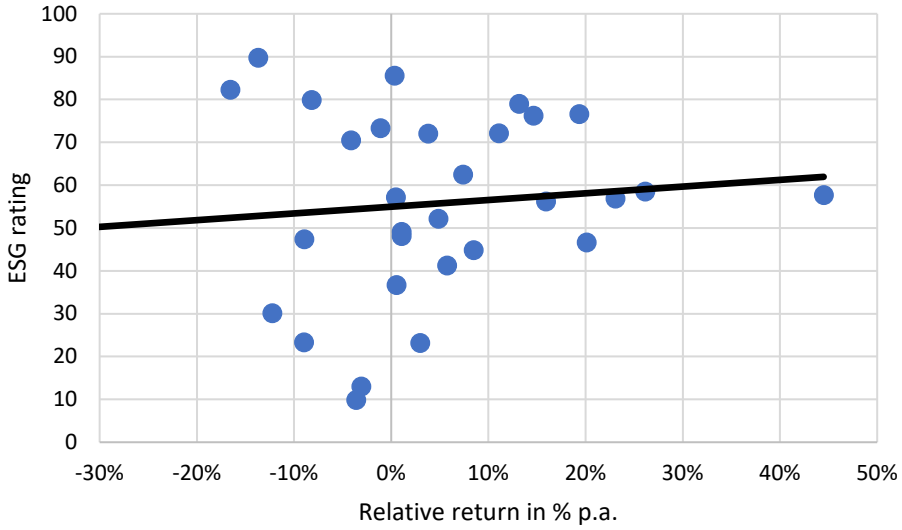


Fig. 4: Correlation between ESG ratings in 2018 and relative returns in 2018

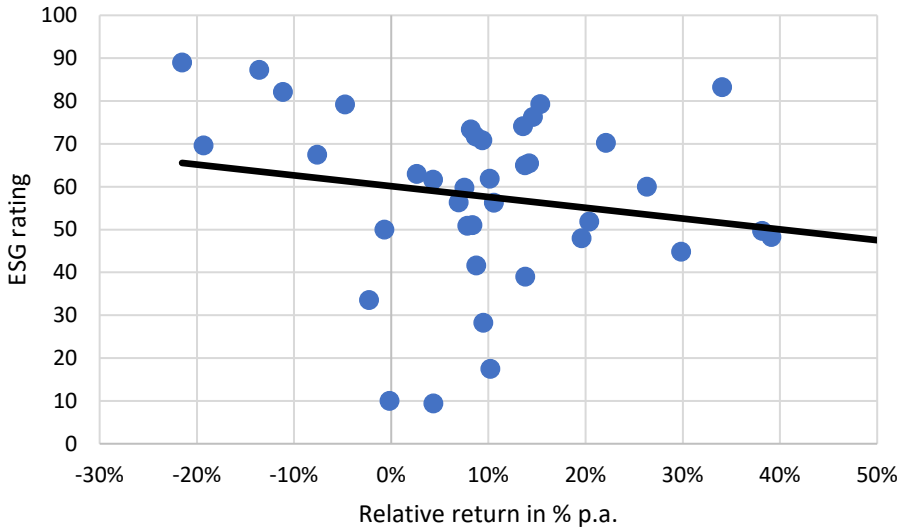


Fig. 5: Correlation between ESG ratings in 2019 and relative returns in 2019

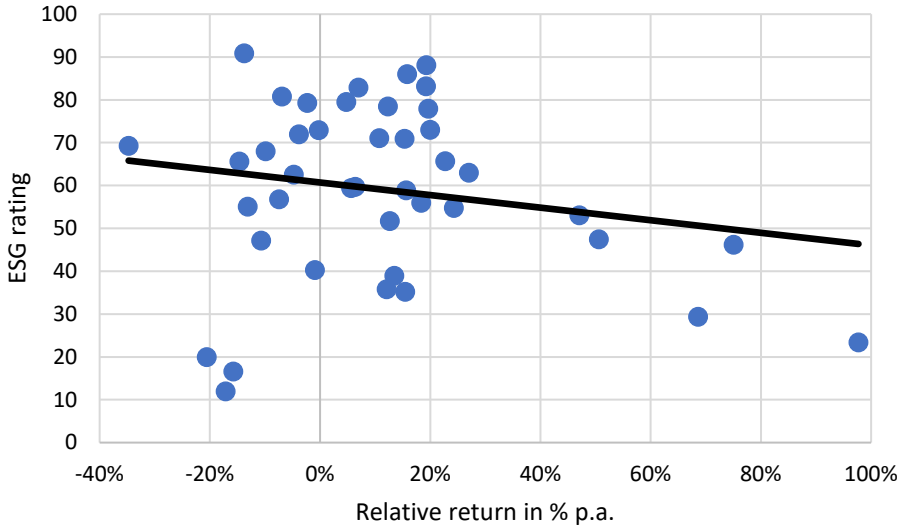


Fig. 6: Correlation between ESG ratings in 2020 and relative returns in 2020

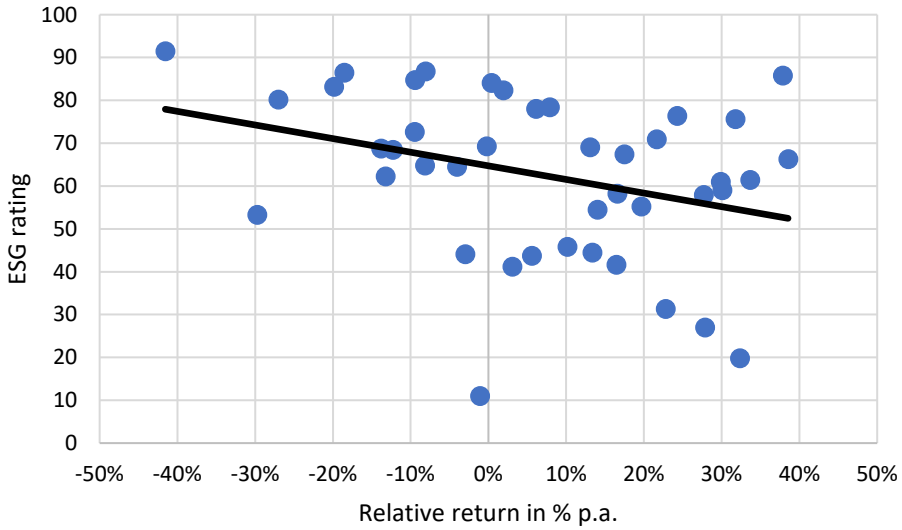


Fig. 7: Correlation between ESG ratings in 2021 and relative returns in 2021

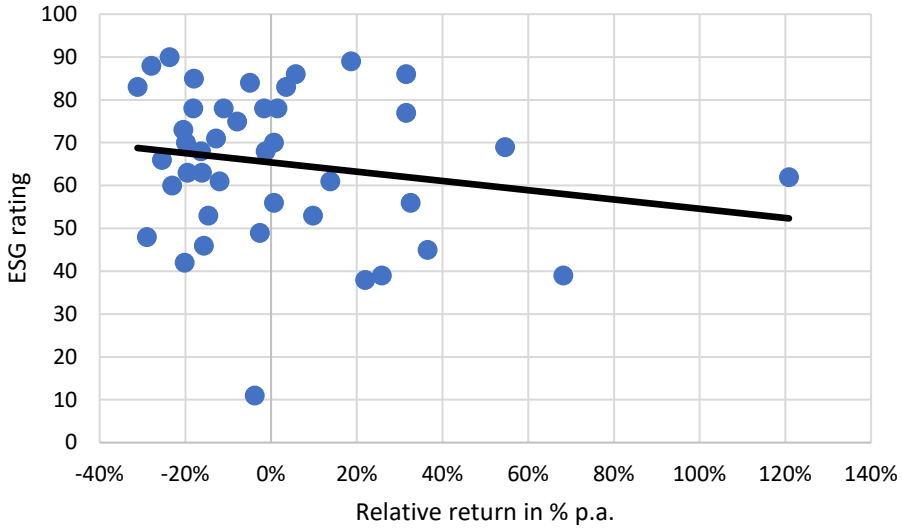


Fig. 8: Correlation between ESG ratings in 2022 and relative returns in 2022

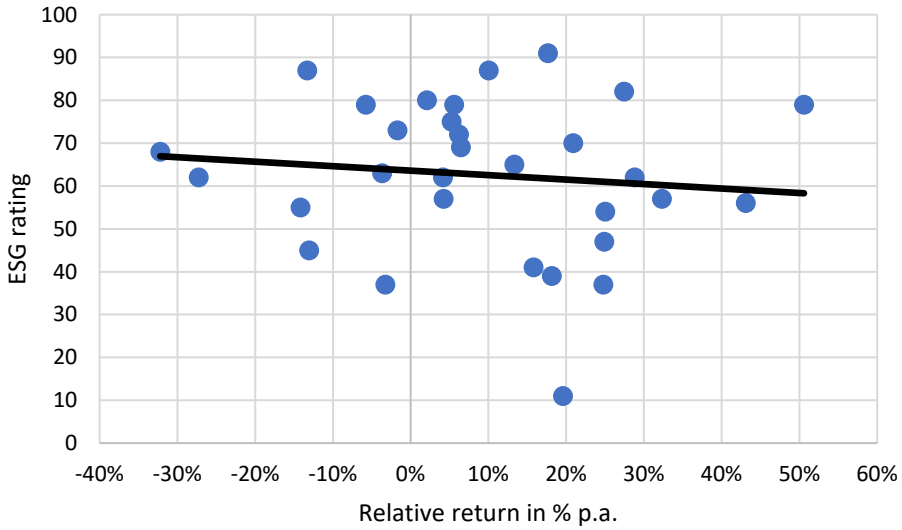


Fig. 9: Correlation between ESG ratings in 2023 and relative returns in 2023

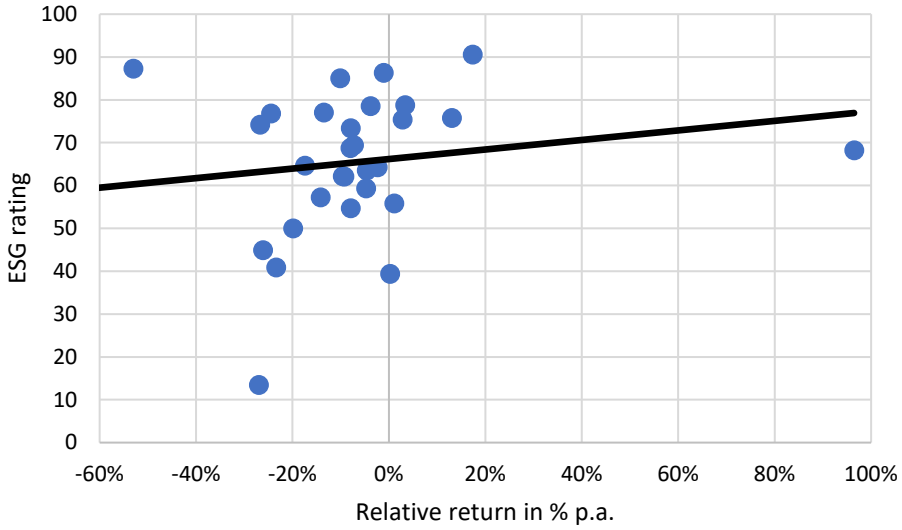


Fig. 10: Correlation between ESG ratings in 2016 and relative returns in 2017

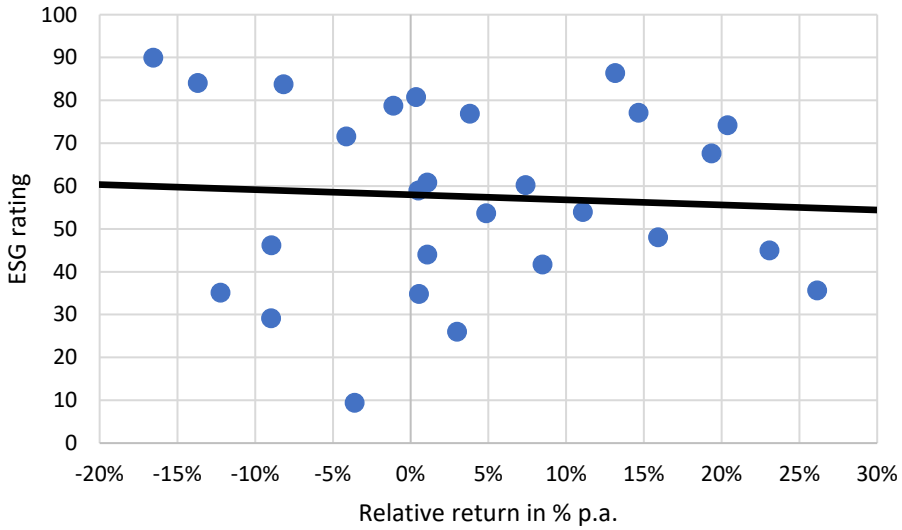


Fig. 11: Correlation between ESG ratings in 2017 and relative returns in 2018

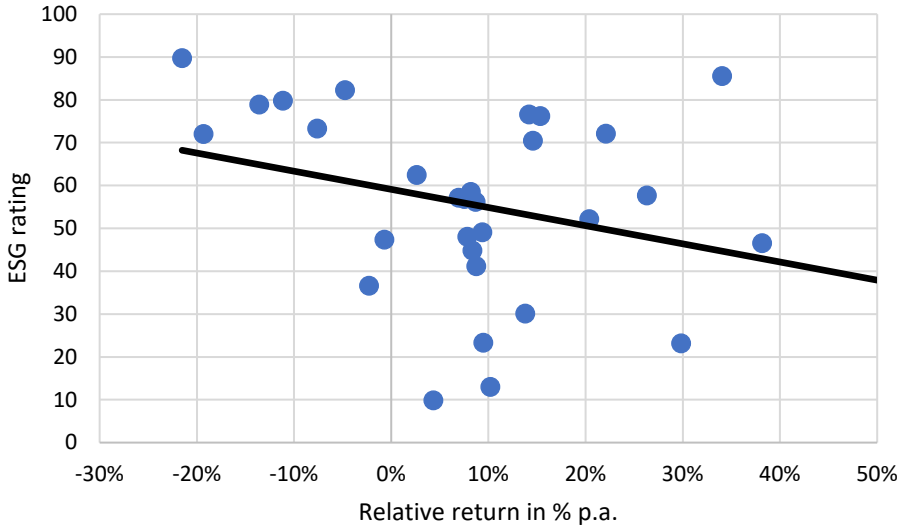


Fig. 12: Correlation between ESG ratings in 2018 and relative returns in 2019

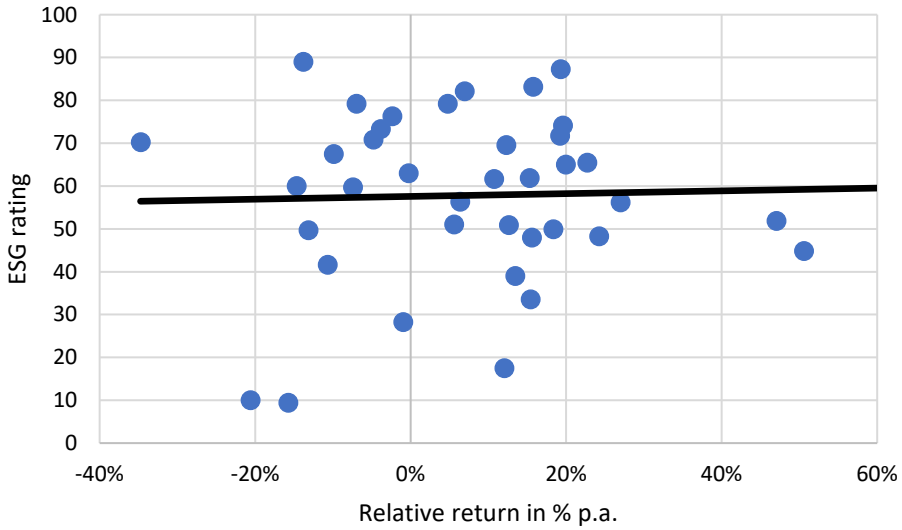


Fig. 13: Correlation between ESG ratings in 2019 and relative returns in 2020

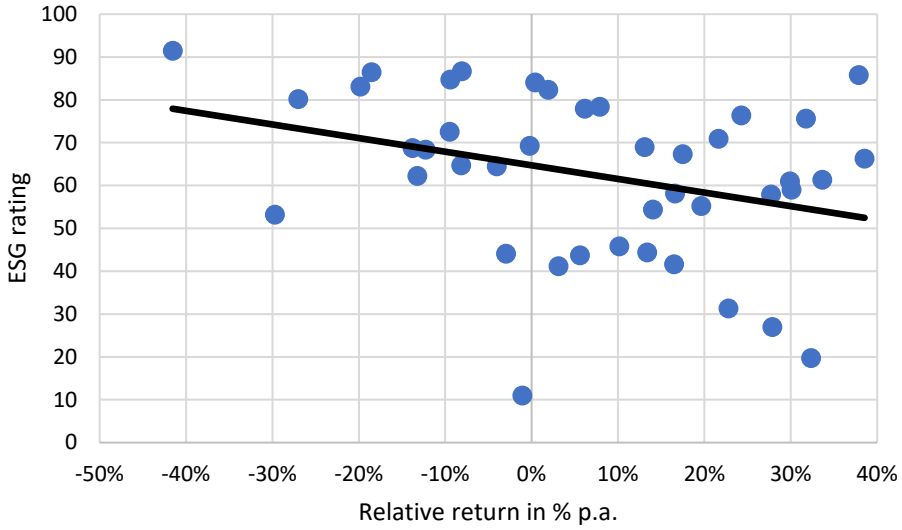


Fig. 14: Correlation between ESG ratings in 2020 and relative returns in 2021

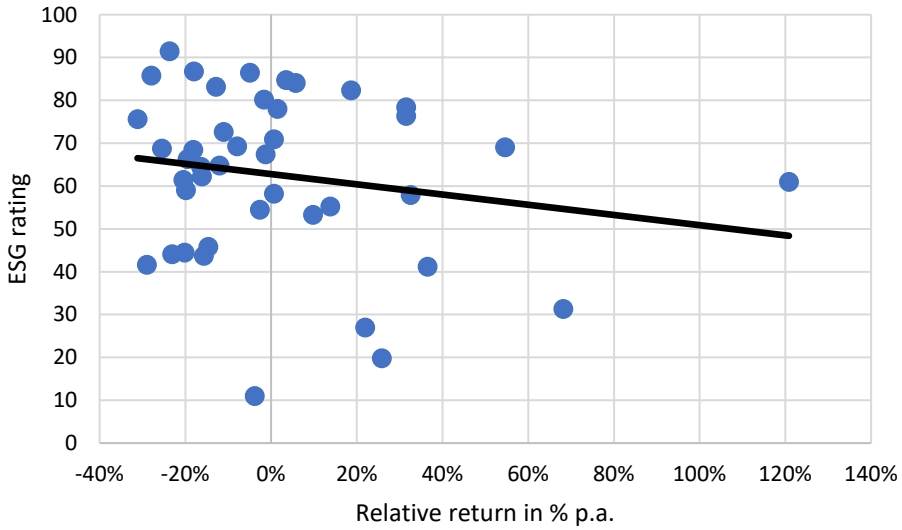


Fig. 15: Correlation between ESG ratings in 2021 and relative returns in 2022

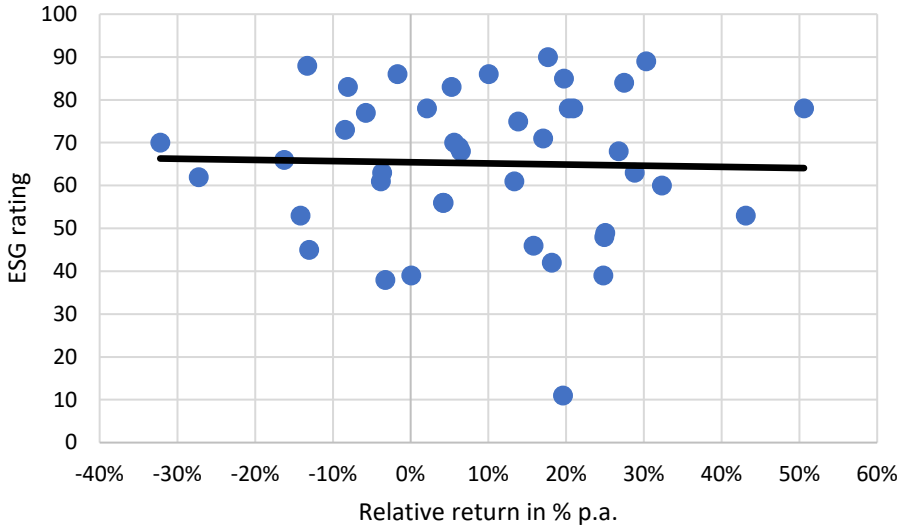


Fig. 16: Correlation between ESG ratings in 2022 and relative returns in 2023

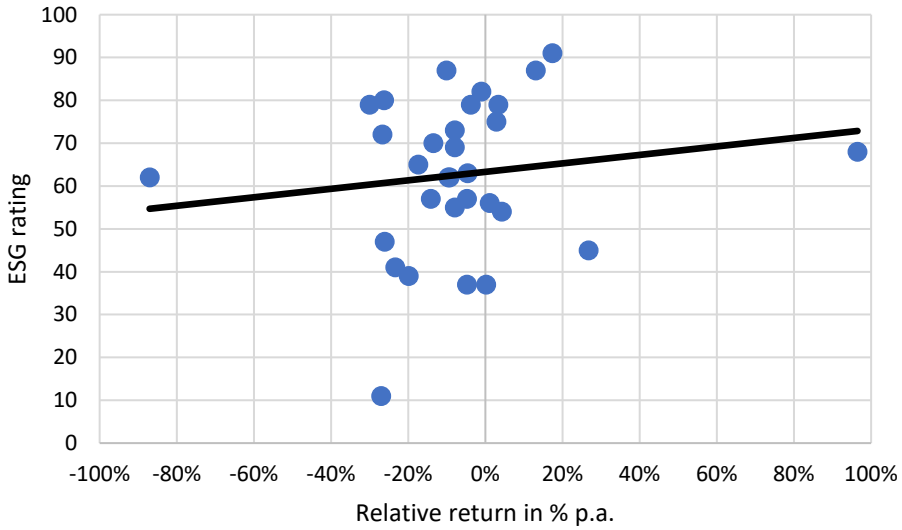
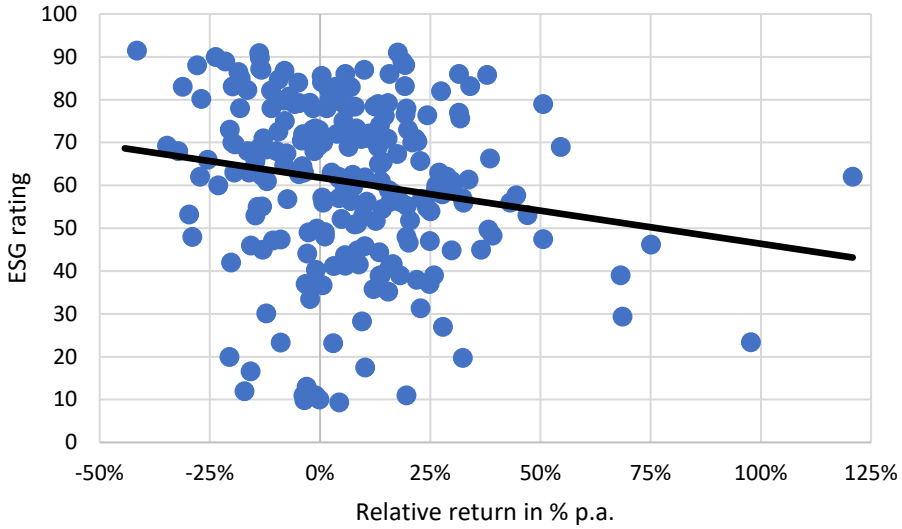


Fig. 17: Correlation between ESG ratings and relative returns in the preceding year from 2017 to 2023



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