

The relationship between financial performance and SRI strategies on mutual funds - Evidence from Europe

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Abstract

Social responsibility has become a hot topic during the past few years, and one aspect of it is the benefits and costs it brings to a socially responsible investor. The purpose of this study is to examine whether different SRI strategies used by equity mutual funds are related to their financial performance. By using multiple regression analysis and a sample of 127 European SRI mutual funds over the period from 2007 to 2019, I do not find a significant relationship between screening intensity and financial performance for SRI funds, neither a significant curvilinear relationship. Furthermore, there is no evidence that shareholder activism in ESG matters would positively relate to financial performance. However, I find evidence that funds with below-average or low ESG ratings outperform funds with above-average or high ESG ratings. This result suggests that, on average, investors pursuing to invest in highly rated ESG funds pay a premium on their investment strategy.

Keywords socially responsible investing, SRI mutual funds, sustainability, SRI screening, shareholder activism, mutual fund performance

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1. Introduction

Socially responsible investing (SRI) has recently gained popularity as an investment strategy. Over the last decades, there has been growing demand from conscious private and institutional investors towards environmental sustainability and social awareness. As environmental and social issues have played a significant role in many investors' choices, SRI has been designed to meet such needs. As a result, many mutual funds have incorporated SRI into their investment strategies aiming for both financial and environmental/social return instead of financial only.

According to the European Social Investment Forum (Eurosif), SRI is an investment strategy that implements Environmental, Social and Governance (ESG) criteria in investment decisions (Eurosif, 2018). This definition in mind, the performance of SRI funds have been put into the spotlight by a growing number of researchers that have studied the relationship between SRI investing and financial profits. Most of the current research seems to find a nonnegative relationship between these two (Friede et al., 2015). More importantly, many studies seem to report positive findings highlighting that the positive ESG impact on corporate financial performance appears stable over time. However, it is good to notice the heterogeneity of SRI funds as well as the differences in SRI strategies and the intensity of screening, affecting the quality of the research.

In this paper, I study the relationship between different SRI strategies of European equity mutual funds and their financial performance. I will investigate the effect of different identified elements of SRI that are, in my case, the number of screens, ESG rating, and shareholder activism (Eurosif, 2018). I will focus on pan-European mutual funds as Europe has a long history in SRI investing, and there is enough fund-level data available. My findings contribute to existing research by analysing the effects of the specific SRI strategies in 127 European SRI mutual funds between 2007 and 2019.

There are several valid reasons to re-examine some of the earlier research in this paper. First, few studies examine SRI performance over the past years. Second, there are fewer studies that concentrate on the pan-European level, and the findings for those are not fully consistent (Friede et al., 2015). Third, it is obvious that during the past few years there has been a vastly increased interest in sustainability and ESG issues, meaning that some fundamentals of SRI investing might have changed. Last, by dividing the sample period into two, I'm able to investigate SRI fund performances between the financial crisis and the current SRI boom, as well as compare my findings against earlier similar research (e.g. Nofsinger et al., 2014.)

As the main results, I do not find a significant relation between screening intensity and financial performance for SRI funds, neither a curvilinear relationship. Furthermore, there is no evidence that shareholder activism in ESG matters would positively relate to financial performance. However, I find

evidence that funds with below-average or low ESG ratings outperform funds with above-average or high ESG ratings.

1.1. Literature review and theoretical motivations

First, this literature review describes the different SRI strategies applied by mutual funds in the European market. Second, I will explain and discuss the two main theories — the modern portfolio theory and the stakeholder theory, that mostly link to SRI mutual funds' performance related to the financial markets. Last, I will review and discuss the previous literature examining the impact of SRI strategies on mutual funds' financial performance.

SRI strategies

Eurosif (2018) has classified SRI strategies into seven different categories. In this paper, I will concentrate on the three first ones. The seven strategies are explained as follows:

- 1. Exclusion of holdings from the investment universe*
- 2. Engagement and voting on sustainability matters*
- 3. Best-in-Class investment selection*
- 4. ESG integration*
- 5. Norms-based screening*
- 6. Sustainability themed investment*
- 7. Impact investing*

According to Eurosif (2018), increasing amounts of investment corroborate positive trends across the SRI investment industry, with growth remaining consistent across all strategies at the European level except for norms-based screening and exclusions. In general, exclusion is still the most prominent strategy in terms of assets with tobacco as the most popular exclusion criteria. However, there is a clear indication of investors' trending willingness to engage with companies they invest in and positively contribute to the sustainability of the business model. Besides, best-in-class funds and impact investing registered positive uptakes, while norms-based screening, including international initiatives and guidelines such as UN Global Compact, OECD Guidelines for MNCs and ILO Convention lost traction as investors appear to be looking elsewhere for exclusion-related strategies.

As, for example, best-in-class and active engagement strategies have gained traction during the recent years in Europe, it is also interesting to provide such research angles regarding the trending SRI strategies.

Modern portfolio theory

The modern portfolio theory, which was developed by Markowitz (1952), formalises diversification in investing mathematically. The idea is that the portfolio's risk and return should be considered rather than an individual asset's risk and return, suggesting that the investors should choose diversified investment in their portfolio by picking assets that correlate with each other as little as possible. Essentially, investors can reduce risk through diversification using a quantitative method. Also, Markowitz concludes that unless there is a perfect positive correlation between the returns of the risky assets, the risk reduces by diversifying across assets.

The total risk of the portfolio can be divided into two types: systematic risk and unsystematic risk. Systematic or market risk is the volatility risk of the whole capital market, while unsystematic or idiosyncratic risk affects specific security or industry (Bodie et al., 2014). However, Markowitz shows that by holding different stocks, the unsystematic risk carried by the different stocks or assets can offset each other, leading into diversification benefits (Markowitz, 1952). In general, the modern portfolio theory suggests that investors can and should maximise the expected return of their portfolio for a given level of market risk. In addition, the theory assumes that all investors are rational and risk-averse, suggesting that they only accept a higher risk if their expected return is higher.

Connecting the modern portfolio theory into SRI investing, one can argue that when a fund excludes certain types of stocks or even industries from its investment universe, the remaining companies have more correlation with each other. Therefore, the funds are prone to higher idiosyncratic risk since they are not able to build the same effective frontier and optimal portfolio (Kurtz and DiBartolomeo, 1999).

Furthermore, Walley and Whitehead (1994) argue that the costs related to sustainable investing are not offset by the potential financial gains of the investing strategy, leading to a reduced financial performance of such funds.

Stakeholder theory

In contrast to the supporters of the modern portfolio theory, several scholars argue SRI to create novel investment opportunities and improve financial performance (Freeman, 1984). The theory suggests that taking social dimensions and responsibility into account help companies to efficiently manage their resources and, therefore, help them to lower the governance costs, improve their financial performance

and, even, reduce company-specific risks (Ambec and Lanoie, 2008; Lee et al., 2010). On the other hand, companies with weak shareholder rights tend to exhibit significant stock market underperformance (Core et al., 2016). Highlighting the long-term benefits of corporate social responsibility, Barnett and Salomon (2006) argue that corporates managing their stakeholder relationships well over time usually achieve better long-term risk-adjusted financial performance.

Previous studies on SRI mutual funds

As there is a theoretic background supporting investing in socially responsible companies, such an investing strategy can be argued to offer better financial performance compared to traditional investing. Thus, the costs related to screening in SRI investing could be offset by the positive effects proposed by the stakeholder theory. For example, Barnett and Salomon (2006) contribute to this claim showing the advantages of social screenings in SRI strategies, if implemented sufficiently. Supporting this argument, Capelle-Blancard and Monjon (2014) suggest that when SRI funds incorporate multiple screenings, they become more selective in picking the best-performing companies into their holdings. Furthermore, Lee et al. (2010) claim that SRI funds with highly-screened portfolios have lower total risk as the fund managers deliberately choose stocks with lower beta as an attempt to decrease their overall risk.

Renneboog et al. (2008) hypothesise that the superior performance of SRI funds compared to conventional funds can be attributed to the fund-portfolio composition. An explanation could be that the SRI funds invest in companies that demonstrate corporate social responsibility and transparency of their operations. One can expect that these companies are likely to be better managed and hence, generate better risk-adjusted-performance. While this conjecture has produced some mixed findings, Friede et al. (2015) show in their meta-analysis of over 2200 individual studies that the business case for ESG investing is empirically very well-founded. Roughly 90 % of studies find a nonnegative relationship between ESG and corporate financial performance (CFP). More importantly, most studies seem to report positive findings highlighting that the positive ESG impact on CFP appears stable over time.

Perhaps the most common criticism of socially responsible investment funds is that imposing non-financial screens restrict investment opportunities, reduces diversification efficiencies and thereby adversely impacts performance (Lee et al., 2010). As an example, a few studies find a curvilinear relation between screening intensity and systematic risk, meaning that screening first reduces financial performance, but the relationship bounces back when screening intensity becomes high (Lee et al., 2010; Capelle-Blancard et al. 2014). So-called "sin stocks" also seem to have higher expected returns than otherwise comparable stocks, consistent with them being neglected by norm-constrained investors facing greater litigation risk heightened by social norms (Hong and Kacperczyk, 2009).

Regarding research regarding SRI performance during different market cycles, Nofsinger et al. (2014) suggest that SRI funds perform better than conventional funds in market crisis periods but underperform in non-crisis periods. They find that investors seeking downside protection could value this pattern.

1.2. Hypothesis

Based on the previous studies on the financial performance of SRI mutual funds (e.g. Barnett and Salomon, 2006; Lee et al. 2010; Renneboog et al. 2008; Capelle-Blancard and Monjon, 2014), I formulate three (3) main hypotheses.

First, I hypothesise that higher screening intensity leads to reduced financial performance. However, as the screening intensity reaches a high level, the financial performance increases again. I base the assumption of a curvilinear financial performance on the modern portfolio theory and the stakeholder theory. The reason is that when a fund's investment universe is restricted, it could offset the increased costs by investing in well-performing companies with good governance and efficient management.

H1: The relationship between screening intensity and financial performance of SRI mutual funds is negative but curvilinear.

Second, based on the suggestions from Capelle-Blancard and Monjon (2014) and the stakeholder theory, I assume that a higher ESG rating of a fund leads to increased financial performance. I use the Morningstar ESG rating to evaluate the quality of the screening process of a fund. A fund's ESG rating is created by aggregating portfolio-level ESG scores related to its peer funds.

H2: The relationship between the quality of an SRI fund's screening and its financial performance is positive.

Third, shareholder activism including e.g. voting and other engagement have become the second most popular SRI strategy during the past years. The general idea is that shareholders can influence a corporation's behaviour in various ESG related issues by exercising their rights as partial owners, aiming to change the target company's culture and practices from inside. E.g. Renneboog et al. (2008) state that shareholder activism can lead to a positive impact in financial returns as it emphasises high managerial quality and can reduce costs from potential social or environmental crises. Thus, I formulate the following third and last main hypothesis:

H3: SRI funds that use active ownership through engagement and voting have better financial performance than those that do not.

2. Data and methodology

In this study, I examine 127 SRI mutual funds on the European market over a 13-year sample period ranging from January 2007 to August 2019. The full sample period consists of 152 months. First, a list of all SRI equity mutual funds in the world is obtained from Morningstar Direct. This list accounts for ~5000 SRI funds, of which I only include equity funds both domiciled in Europe and investing European wide, resulting in 709 funds. The objective of the study is to examine the fund managers' ability to make financially and socially profitable choices by incorporating SRI strategies, and therefore I only include funds with at least one (1) type of screen. Finally, I only include funds that have inception date latest in 2007, and which announce their management fees as well as financial performance constantly from January 2007 onwards. This exclusion leaves us with a total sample of 127 SRI mutual funds. I collect data for each fund from Morningstar Direct accessed via Aalto University for monthly net returns (after fees), fund SRI strategy, fund ESG rating, fund's inception date, fund size, and total management fees.

Dependent variable

This study aims to examine the relationship between different SRI strategies and financial performance. Thus, my dependent variable is the risk-adjusted performance of a given SRI fund over the whole period, calculated by Jensen's alpha. This decision is in line with earlier research, including Barnett and Salomon (2006), Lee et al. (2010), and Capelle-Blancard and Monjon (2014). Jensen's alpha is a risk-adjusted performance measure that represents the average return on a portfolio or investment, above or below that predicted by the capital asset pricing model (CAPM). Jensen's measure is widely used to determine a portfolio manager's ability to earn an abnormal return for the used level of risk. Based on the Capital Asset Pricing Model, we calculate Jensen's alpha as follows (Jensen, 1967):

$$R_{i,t} - r_{f,t} = \alpha_i + \beta_i (R_{m,t} - r_{f,t}) + \epsilon_{i,t}$$

where $R_{i,t}$ is the return on portfolio for fund i in month t , $r_{f,t}$ is the risk-free local rate in month t , α_i is Jensen's alpha for fund i , β_i is the beta of the portfolio with respect to the appropriate market index, $R_{m,t}$ is the return for the appropriate market index in month t , and $\epsilon_{i,t}$ denotes the random error term. If the alpha is positive and significant, it indicates that the fund outperforms the market and earns more than the expected risk-adjusted return.

For the risk-free rate, I use the 3-month Euribor rate, similarly to Capelle-Blancard and Monjon (2014). For the market index, I use the MSCI Europe Total Return (Net) Index. I find this index being the closest approximate of European market returns for the study. E.g. Bauer et al. (2007) suggest that using a regular

index for SRI funds better explains their performance. One explanation of this is that using SRI indices as a proxy for market returns does not always fully reflect the screening strategies used by different SRI funds as there is a lot of heterogeneity in the practices and strategies of such funds. Thus, it is preferred to stick with the regular market index in this study.

Independent variables

I include the following independent variables: screening intensity, the square of screening intensity, shareholder activism, high ESG rating, above-average ESG rating, below average ESG rating and low ESG rating. I assume these factors to stay unchanged over the sample period of 13 years. I include shareholder activism and the different ESG ratings as dummies and screening intensity as a quantitative variable. The more screens a fund incorporates in its strategy, the more restricted its investment universe is, highlighting the possible lack of diversification for a specific fund.

For incorporating screening intensity as a variable, I follow the categorisation employed by US SIF, namely environment, social, governance, and products (“sin stocks”) related screens. As an addition to the categorization, I include the deployment of norm-based screening as a type of screen (e.g. Capelle-Blancard and Monjon, 2014). From Morningstar Direct, I’m able to identify 21 matching screens that can be either exclusive or positive by nature. I drop out corporate governance-based screens as enough data is not available from Morningstar.

Control variables

Like earlier research, I aim to control for factors that could affect the financial performance of the studied funds systematically. I include the following controls to my model: fund size, total management fees of a fund, and fund age. For fund size, I calculate the logarithm for the latest data point of a fund’s size in EUR. I use Morningstar’s classification for management fees including management, administrative, 12b-1 fees, and other costs that are taken out of assets. For fund age, I measure age by the number of years since the inception date.

The factors I include as controls are seen to affect the financial performance of a mutual fund in earlier research papers. For example, older funds accumulate collective experience over time that might be invaluable when picking new stocks and managing the current portfolio (Argote, 1999). Besides, bigger funds could, in theory, outperform smaller funds due to the potential economies of scale. However, there is evidence of a slightly negative relationship between fund size and financial performance (Chen et al., 2004).

Regarding management fees, I follow the example of Renneboog et al. (2008) and include it as one of the three control variables.

Model

Finally, I arrive in the following empirical model for my study. Multiple regression is used to study the relationship between Jensen's alpha and the variables. Based on the assumptions explained earlier and to answer the hypotheses H1, H2 and H3, I build the following model to examine the relationship between risk-adjusted performance, screening intensity, active ownership, and the quality of an SRI fund's screening:

$$\mathbf{Alpha}_i = \alpha_0 + \beta_1 SI_i + \beta_2 SI_i^2 + \beta_3 \mathbf{Activism}_i + \beta_4 \mathbf{ESG\ high}_i + \beta_5 \mathbf{ESG\ above\ average}_i + \beta_6 \mathbf{ESG\ below\ average}_i + \beta_7 \mathbf{ESG\ low}_i + \beta_8 \mathbf{Size}_i + \beta_9 \mathbf{MF}_i + \beta_{10} \mathbf{Age}_i + \epsilon_i$$

where alpha relates to annual Jensen's alpha for fund i , SI_i represents screening intensity, and SI_i^2 is the square of screening intensity, since I aim to investigate a possible curvilinear relationship between screening and risk-adjusted-performance. $\mathbf{Activism}_i$ stands for active shareholder engagement for fund i as a dummy. $\mathbf{ESG\ high}_i$, $\mathbf{ESG\ above\ average}_i$, $\mathbf{ESG\ below\ average}_i$, and $\mathbf{ESG\ low}_i$ as dummy variables stand for the quality of the SRI screening process for fund i . \mathbf{Size}_i , \mathbf{MF}_i and \mathbf{Age}_i , are the control variables to represent size as log, management fees, and age in years since inception for fund i .

Ethical considerations and limitations of the empirical study

The regression data points are acquired directly from Morningstar Direct's database. However, the data points for screening intensity and ESG ratings are only available from 2019, lacking historical data. Thus, I must assume that the SRI policies and ESG ratings of the studied funds have stayed the same during the whole sample period that, in practice, can affect the reliability of the results. However, the strategic policies shouldn't change too often in such funds.

Second, I must account for the possible survivorship bias in the sample. However, as I recognise that Morningstar Direct is survivorship biased as a database, I'm not aware of studies that would suggest the existence of a survivorship bias within the SRI mutual fund universe. Renneboog et al. (2008) note the attrition rate of SRI funds is 0.25 per cent for the global funds in their sample. Such a low rate means that there should be a very limited chance for funds dropping out from the sample for the period I use.

At last, since OLS regression assumes that there is no correlation between the errors and that the variance of the error term is constant (Barnett and Salomon, 2006), further tests could be performed to control for multicollinearity and heteroskedasticity. However, the pairwise correlation between all the variables is quite small in my sample except screening intensity and the square of screening intensity.

3. Results

3.1. Descriptive statistics

The full sample contains in total of 8636 monthly returns (127 funds * 68 months) for Jensen's alpha. Tables 1 and 2 show some descriptive statistics of the used variables. Table 1 shows the differences in screening quality and the level of shareholder activism in the European SRI funds of this sample. The biggest share of the SRI funds classifies as average ESG funds (36.2 % or 46 funds). Also, the sample consists of a relatively bigger share of high/above-average ESG funds (41.7 % or 53 funds) than below average/low ESG funds (22.1 % or 28 funds). This figure shows that most European SRI funds are not just in theory but, in practice, quite well-performing by the Morningstar's ESG standards. Regarding the share of SRI funds with shareholder activism strategy, Table 1 shows that around a quarter of the funds (23.6 % or 30 funds) have incorporated such strategy.

Table 1

Screening quality and shareholder activism of the European SRI fund sample

Panel A concerns the ESG rating in different levels, and Panel B suggests the percentage of funds with shareholder activism strategy.

Panel A: ESG Rating	Percentage of funds	Number of funds
High	17.3 %	22
Above average	24.4 %	31
Average	36.2 %	46
Below average	19.7 %	25
Low	2.4 %	3

Panel B: Shareholder Activism	Percentage of funds	Number of funds
Yes	23.6 %	30
No	76.4 %	97

As reported in Table 2, the fund ages range from 13 years since inception to 40 years. The average age of the funds is almost 18 years. Management fees range from 0 % to nearly 3 %, and the average management fee is 1.14 %. Besides, the average number of screens for the SRI funds is 3.9, ranging from 1 to 16. This figure means that no fund in the sample have incorporated all the different identified screens, the maximum being 21 different types of screens.

Table 3 shows the correlation matrix for the variables. It shows that only the screening intensity and the square of the screening intensity are highly correlated. However, this is naturally driven by the mathematical calculation.

Table 2

Characteristics of the SRI fund sample

This table reports some descriptive statistics (mean, standard deviation, minimum, maximum) concerning the number of screens (SI), active ownership (activism), different ESG ratings (excl. average rating), size (log), age (in years since inception), and management fees (MF).

Independent variables	Mean	Std. Dev	Min	Max
SI	3.906	3.223	1	16
Activism	0.236	0.426	0	1
ESG Rating High	0.173	0.380	0	1
ESG Rating Above av	0.244	0.431	0	1
ESG Rating Below av	0.197	0.399	0	1
ESG Rating Low	0.024	0.152	0	1
Control variables				
Size (log)	8.313	0.754	4.127	9.975
Management Fee	1.144	0.567	0.000	2.990
Age	17.630	4.729	13.000	40.000

Table 3

Correlation matrix for the variables.

The table excludes ESG above-average and ESG below-average ratings due to the limited space.

	<i>Alpha</i>	<i>SI</i>	<i>SI²</i>	<i>Activism</i>	<i>ESG High</i>	<i>ESG Low</i>	<i>Size (log)</i>	<i>MF</i>	<i>Age</i>
Alpha	1								
SI	0.029	1							
SI ²	-0.010	0.962	1						
Activism	-0.100	0.097	0.104	1					
ESG high	-0.217	0.124	0.034	-0.206	1				
ESG low	0.238	-0.125	-0.075	-0.087	-0.071	1			
Size (log)	0.241	-0.174	-0.112	0.040	-0.063	0.073	1		
MF	0.171	0.103	0.074	-0.031	0.063	-0.087	-0.138	1	
Age	0.134	-0.074	-0.093	0.036	-0.004	-0.032	0.184	-0.077	1

Table 4 shows the performance differences regarding net returns, alpha, and Sharpe for the different fund categories. The alphas for the whole sample range from -0.702 to 0.535 and the average alpha is 0.046. Funds with average ESG scores and small-sized funds have the highest standard deviations for both alpha and Sharpe of the different categories. In contrast, funds with active ownership have the lowest standard deviation for alpha and Sharpe, followed by high/above-average ESG funds.

In addition, funds with below-average / low ESG ratings have, on average, the highest return, alpha, and Sharpe of all the different categories. They outperform high/above-average ESG funds with 130 % better

return, 170% alpha and 40% Sharpe. Also, the performance difference between below average/low ESG funds and average ESG funds is noteworthy, although much smaller. This implies that funds with lower ESG ratings have better financial performance. On the other hand, funds in big size outperform smaller funds on average, and funds without active ownership outperform funds with active ownership strategy.

Skewness is positive for the alphas in most categories, except average ESG funds and below-average/low ESG funds, indicating that the values concentrate mainly to the left side of the mean values in the different categories, and the extreme values are on the right. Regarding Kurtosis, the number is less than three (3) for all the categories, meaning that the distribution is shorter, and tails are thinner than the normal distribution.

Table 4
Performance between different categories

The table shows the minimum, maximum and mean values for portfolio net return (after fees), Jensen's alpha and Sharpe ratio. Besides, it shows the standard deviation, skewness and kurtosis for these different fund categories. I also regard top 40 % in size as big funds and lowest 40 % in size as small funds.

Category	Variable	Min	Mean	Max	Std. Dev.	Skewness	Kurtosis
Whole sample n= 127	Return	-0.488	0.318	0.790	0.193	-0.297	2.415
	Alpha	-0.702	0.046	0.535	0.196	0.233	1.275
	Sharpe	-0.252	-0.123	-0.028	0.037	0.243	0.791
Funds with high/ above-average ESG n= 53	Return	-0.238	0.222	0.479	0.128	-1.426	5.027
	Alpha	-0.273	-0.037	0.314	0.132	0.163	-0.134
	Sharpe	-0.192	-0.141	-0.082	0.024	-0.464	-0.101
Funds with average ESG n= 52	Return	-0.488	0.426	0.790	0.042	-1.283	4.091
	Alpha	-0.702	0.142	0.535	0.234	-0.605	1.784
	Sharpe	-0.252	-0.103	-0.028	0.042	-0.603	1.478
Funds with below- average/low ESG n= 28	Return	0.088	0.511	0.790	0.181	-0.815	-0.045
	Alpha	-0.135	0.232	0.535	0.192	-0.523	-0.642
	Sharpe	-0.159	-0.085	-0.028	0.037	-0.744	-0.383
Funds in big size n= 51	Return	0.143	0.359	0.790	0.157	1.058	0.625
	Alpha	-0.158	0.073	0.535	0.147	1.302	1.877
	Sharpe	-0.167	-0.118	-0.028	0.030	1.291	1.556
Funds in small size n= 51	Return	-0.488	0.269	0.696	0.228	-0.569	2.009
	Alpha	-0.702	0.003	0.506	0.233	0.179	1.024
	Sharpe	-0.252	-0.133	-0.045	0.043	0.148	0.345
Funds with active ownership n= 30	Return	0.143	0.283	0.477	0.093	0.576	-0.654
	Alpha	-0.158	0.011	0.248	0.117	0.670	-0.213
	Sharpe	-0.167	-0.132	-0.082	0.022	0.600	0.105
Funds without active ownership n= 97	Return	-0.488	0.329	0.790	0.214	-0.427	1.798
	Alpha	-0.702	0.057	0.535	0.214	0.095	0.878
	Sharpe	-0.252	-0.121	-0.028	0.040	0.077	0.467

3.2. *Regression results and analysis*

I run the main tests by regressing Jensen's alpha over screening intensity, the square of screening intensity, shareholder activism, ESG high, ESG above average, ESG below average, ESG low, and the control variables. The results are shown in Table 5 below. Module (1) includes only the independent variables. Modules (2) and (3) add one control variable at a time, and module (4) includes all the considered controls in addition to the independent variables. I include the whole sample period from 2007 to 2019 into my main tests.

The regression results show that I can't find a significant relationship between screening intensity and financial performance for the funds. The relationship is slightly negative (-0.013 % monthly), but the results are insignificant in all modules. The square of screening intensity is slightly positive, implying for a curvilinear (U-shaped) relationship between screening intensity and financial performance. However, the results are not significant either for any of the different modules. Thus, I don't find enough statistical support for hypothesis 1.

My regression results show that fund specific ESG ratings correlate with financial performance in all the different rating levels. Interestingly, the results show the opposite effect compared to my original hypothesis 2. High ESG funds lost a monthly return of -0.097 %, and above-average ESG funds lost slightly less return of -0.087 %, both results being robust at a 5 % significance level. On the contrary, below average ESG funds earned 0.152 % positive monthly return, and the small portion of low ESG funds even 0.291 % positive return, both results being significant at the 1 % level. The results imply that lower ESG rated mutual funds attract better financial returns than higher ESG rated funds. Thus, I can't accept hypothesis 2.

For my last hypothesis (H3), I can't find a significant relationship between shareholder activism and fund financial performance. Thus, I must reject the hypothesis. The relationship seems to be slightly negative, but the results are not robust in any of the different modules.

For the different control variables, I find evidence at a 5 % significance level that fund size correlates positively with financial returns, in contrast to Chen et al. (2004). Furthermore, management fees have a positive impact on the financial performance of 0.074 % monthly at a 1 % robustness level.

In general, the SRI funds in my sample have underperformed the European market index during 2007 and 2019. This is an interesting finding compared to most of the earlier research that find a nonnegative relationship between SRI strategies and financial returns (Friede et al., 2015).

Table 5

The impact of the SRI strategies on financial performance

This table presents results from OLS regression of risk-adjusted performance on the characteristics of SRI strategies. The dependent variable is Jensen's alpha. The independent variables are screening intensity (SI), the square of screening intensity (SI²), active ownership (activism), and different ESG ratings (excluding average ESG rating). The sample includes 127 SRI mutual funds. (D) indicates a dummy variable. Standard errors are shown in parenthesis. * p < 0.10, ** p < 0.05, *** p < 0.01. Module (1) includes independent variables. Module (2) adds size as a control variable. Module (3) adds size and management fee as control variables. Module (4) adds size, management fee & age as control variables.

	(1)	(2)	(3)	(4)
SI	-0.019 (0.020)	-0.007 (0.021)	-0.012 (0.020)	-0.013 (0.020)
SI ²	0.002 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
Activism (D)	-0.042 (0.037)	-0.047 (0.037)	-0.047 (0.036)	-0.049 (0.036)
ESG High (D)	-0.081* (0.047)	-0.085* (0.046)	-0.095** (0.045)	-0.097** (0.045)
ESG Above av. (D)	-0.083* (0.046)	-0.070* (0.042)	-0.084** (0.041)	-0.087** (0.041)
ESG Belov av. (D)	0.185*** (0.043)	0.175*** (0.043)	0.159*** (0.042)	0.152*** (0.043)
ESG low (D)	0.285*** (0.104)	0.2884*** (0.103)	0.291*** (0.100)	0.291*** (0.100)
Size		0.040* (0.021)	0.045** (0.021)	0.043** (0.021)
MF			0.072*** (0.026)	0.074*** (0.026)
Age				0.002 (0.003)
Constant	0.083 (0.055)	-0.274 (0.198)	-0.386* (0.197)	-0.402** (0.199)
R ²	0.307	0.328	0.369	0.371

I also run the regression model for Jensen's alpha for two different time periods, 2007-2013 and 2014-2019, looking for potential performance differences in the different economic cycles. The first sub-period (2007-2013) is designed to examine fund performances during the economic recession, whereas the latter period (2014-2019) stands for the recent economic upturn in Europe. It is also interesting to investigate whether the recently raised awareness towards social and environmental issues in Europe as well as the

increased investment activity of SRI mutual funds have resulted in a higher financial performance of such funds.

Table 6 shows differences in the variables and overall performance between the two time periods. The main differences are that funds with below-average and low ESG ratings lose their statistical significance for outperformance during the latter period. Another noteworthy result is the highlighted difference in alphas when cutting the period into two. During the economic downturn, alpha is nearly 1 per cent negative (-0.944 %) at a 5 % significance level, compared to the positive monthly return of 0.189 % during 2014-2019. However, Jensen's alpha loses its significance during 2014-2019.

Table 6

The impact of different time periods on financial performance

This table presents results from OLS regression of financial performance on different time periods. The dependent variable is the risk-adjusted performance, measured by Jensen's alpha. The independent variables are screening intensity (SI), the square of screening intensity (SI²), active ownership (activism), and different ESG ratings (excluding average ESG rating). The sample includes 127 SRI equity funds. (D) indicates a dummy variable. Standard errors are shown in parenthesis. * p < 0.10, ** p < 0.05, *** p < 0.01.

	2007-2019	2007-2013	2014-2019
SI	-0.013 (0.020)	-0.021 (0.037)	-0.013 (0.020)
SI ²	0.001 (0.001)	0.002 (0.002)	0.001 (0.001)
Activism (D)	-0.049 (0.036)	-0.051 (0.065)	-0.052 (0.035)
ESG High (D)	-0.097** (0.045)	-0.118 (0.083)	-0.049 (0.045)
ESG Above average (D)	-0.087** (0.041)	-0.049 (0.075)	-0.126*** (0.041)
ESG Below average (D)	0.152*** (0.043)	0.287*** (0.079)	0.024 (0.043)
ESG Low (D)	0.291*** (0.100)	0.402** (0.182)	0.166* (0.098)
Size	0.043** (0.021)	0.033 (0.038)	0.056*** (0.021)
MF	0.074*** (0.026)	0.141*** (0.048)	0.011 (0.026)
Age	0.002 (0.003)	0.005 (0.001)	0.001 (0.003)
Constant	-0.402** (0.199)	-0.944** (0.361)	0.189 (0.195)
R ²	0.371	0.289	0.232

Finally, I compile my three main hypotheses into Table 7 to compare the obtained results with earlier similar studies. In general, my results are mostly in line with similar research. Regarding ESG ratings and shareholder activism, neither Capelle-Blancard and Monjon (2014) nor Renneboog et al. (2008) have found statistical significance results that those strategies would correlate with a positive financial performance of SRI funds.

Regarding the relationship between screening intensity and financial performance, the previous research results are more divided. Barnett and Salomon (2006), as well as Capelle-Blancard and Monjon (2014), suggest a curvilinear relationship. In other words, they find evidence for a negative relationship between the number of screens and mutual fund financial performance but a rebound of risk-adjusted performance as the number of screens increases to the highest levels. However, my results together with Lee et al. (2010) or Biehl and Hoepner (2011) show no statistical significance between screening intensity and financial performance.

Table 7

The relationship between SRI strategies and financial performance

This table summarises empirical studies on the relationship between social responsibility and financial performance. I consider the following hypotheses: H1. The relationship between the screening intensity and financial performance of SRI mutual funds is U-shaped. H2. The relationship between ESG rating and financial performance is positive. H3. SRI funds that use active engagement and voting have better financial performance than those that do not. “Yes” means that the hypothesis is accepted, and “No” means the hypothesis is not accepted. I use the following abbreviation to represent the studies: Barnett and Salomon (2006) for B&S, Capelle-Blancard and Monjon (2014) for CBM, Renneboog et al. (2008) for RTZ, Lee et al. (2010) for LHBA, Biehl, and Hoepner (2011) for B&H. Sippola (19) refers to my paper.

	B&S (06)	CBM (14)	RTZ (08)	LHBA (10)	B&H (11)	Sippola (19)
Country	US	France	17 countries	US	UK	Europe
Period	1972-2002	2004-2007	1991-2003	1989-2006	1998-2010	2007-2019
No. of obs.	61	116	440	61	50	127
H1: U-shaped	Yes	Yes		No	No	No
H2: ESG rating		No				No
H3: Activism		No	No			No

3.3. Robustness tests

To test the validity of the regression results for Jensen’s alpha, I repeat my main tests twice using both the Sharpe ratio (Sharpe, 1966) and the Carhart four-factor model (Carhart, 1997). The results in Table 8 show parallelism to Jensen’s alpha. First, screening intensity and the square of screening intensity both stay insignificant at 5 % level. Second, shareholder activism or fund age does not show a significant relationship

against financial performance. Third, the relationship between ESG ratings and financial performance is negative in all the different methods. However, it is good to notice that Carhart four-factor model loses the significance for the four different dummies representing ESG ratings, whereas Sharpe oppositely highlights the negative correlation effect for all ratings except ESG high at a 1 % significance level.

Last, alpha in both Sharpe and Carhart stay significant at least at a 10 % level, both being negative as with Jensen's alpha. All in all, given the results from the robustness tests, Jensen's alpha can be considered as a reliable enough measure for risk-adjusted performance in this paper.

Table 8

The impact of robustness tests on financial performance

This table presents regression results from robustness tests regarding risk-adjusted performance on SRI strategies. The dependent variables are the Sharpe ratio and the Carhart 4-factor model. The independent variables are screening intensity (SI), the square of screening intensity (SI²), active ownership (activism), and different ESG ratings (excluding average ESG rating). The sample includes 127 SRI mutual funds. (D) indicates a dummy variable. Standard errors are shown in parenthesis. * p < 0.10, ** p < 0.05, *** p < 0.01.

	Jensen's alpha	Sharpe ratio	Carhart 4 factor
SI	-0.013 (0.020)	-0.003 (0.004)	-0.031* (0.018)
SI ²	0.001 (0.001)	0.000 (0.000)	0.002* (0.001)
Activism (D)	-0.049 (0.036)	-0.011* (0.007)	-0.024 (0.032)
ESG High (D)	-0.097** (0.045)	-0.016* (0.008)	-0.025 (0.041)
ESG Above average (D)	-0.087** (0.041)	-0.023*** (0.007)	-0.063* (0.037)
ESG Below average (D)	0.152*** (0.043)	0.030*** (0.008)	0.028 (0.039)
ESG Low (D)	0.291*** (0.100)	0.057*** (0.018)	0.116 (0.090)
Size	0.043** (0.021)	0.008* (0.004)	0.053*** (0.019)
MF	0.074*** (0.026)	0.012** (0.005)	0.060** (0.023)
Age	0.002 (0.003)	0.001 (0.001)	-0.001 (0.003)
Constant	-0.402** (0.199)	-0.200*** (0.036)	-0.316* (0.179)
R ²	0.371	0.421	0.200

4. Conclusions

In this paper, I have analysed the financial performance of European SRI funds compared to the financial markets during the period of 2007-2019. My analysis bases on OLS regression, applying Jensen's alpha to estimate the main factors for over- or underperformance of 127 SRI funds compared to the market index (MSCI Europe Total Net Return). Besides, I have examined how the performance of the studied funds have evolved over economic cycles by studying two sub-periods of 2007-2013 and 2014-2019. The main fund-specific variables in the paper are screening intensity, the square of screening intensity, shareholder activism and Morningstar's ESG rating.

The findings of my study suggest that there is not a significant relationship between screening intensity and financial performance for SRI funds, neither a significant curvilinear relationship. Furthermore, there is no evidence that shareholder activism in ESG matters would positively relate to financial performance. However, I find evidence that funds with below-average or low ESG ratings outperform funds with above-average or high ESG ratings. This result suggests that, on average, investors pursuing to invest in highly rated ESG funds must compromise financial returns on their investment strategy. Also, all the 127 SRI funds together lost a monthly alpha of -0.402 % at a 5 % significance level, meaning that SRI funds have generally underperformed the European equity markets.

My results are partly contradicting to earlier research on the SRI universe. Friede et al. (2015) show in their meta-analysis of more than 2000 empirical studies that, since the mid-1990s, the positive correlation patterns in studies regarding ESG and Corporate Financial Performance have seemed stable over time. However, their findings hold for North America, Emerging Markets, and nonequity asset classes, leaving room for debate regarding studies focusing on European equity markets. Regarding the curvilinear (U-shaped) relationship between screening intensity and SRI mutual fund financial performance, my results are in line with Lee et al. (2010) as well as Biehl and Hoepner (2011), not finding a significant curvilinear relationship either. The results of a non-significant relationship between shareholder activism towards ESG issues and financial performance are in line with Capelle-Blancard and Monjon (2014) and Renneboog et al. (2008). Furthermore, in support of my findings regarding a negative relationship between fund ESG ratings and financial performance, e.g. Capelle-Blancard and Monjon (2014) find similar significant results with their French SRI fund sample.

Besides, opposite to earlier research findings on SRI mutual fund outperformance during periods of market crisis (Nofsinger et al., 2014), I find evidence that SRI mutual funds have underperformed the markets in Europe during 2007-2013 by -0.944 % on a monthly average. My results are significant at a 1 % level. On the other hand, SRI funds have outperformed markets during the recent economic upswing between 2014

and 2019 by a monthly average of 0.189 %. However, the results for 2014-2019 lose significance. The apparent improvement in the performance during the latter period suggests carefully that the recent boom in SRI investing has positively affected the returns of the socially responsible mutual funds.

Overall, it is good to acknowledge that there are certain limitations to the results (see page 10). Moreover, it could be interesting to rerun the test for different markets with a wider sample of SRI funds, to see whether the main findings hold. Furthermore, examining the effects for different types of screens (e.g. environmental, social, positive, negative) would be an interesting addition to the variables. In addition to quantitative research, the results shown in this paper would provide interesting angles for qualitative research on the attitudes and choices made by SRI fund managers. As the SRI funds seem to have underperformed the markets over a longer-term, it would be interesting to examine to what extent and how the investors are willing to pay for their values.

References

- Ambec, S., and Lanoie, P. (2008). *“Does it pay to be green? A systematic overview.”* Academy of Management Perspectives, 22: 45-62.
- Argote, L. (1999). *“Organizational learning: Creating, retaining and transferring knowledge.”* Norwell, MA: Kluwer.
- Barnett, M. L., and Salomon, R. M. (2006). *“Beyond dichotomy: The curvilinear relationship between social responsibility and financial performance.”* Strategic Management Journal, 27 (11): 1101-1122.
- Bauer, R., Derwall, J., and Otten, R. (2007). *“The Ethical Mutual Fund Performance Debate: New Evidence from Canada”.* Journal of Business Ethics, 70: 111–124.
- Biehl, C. F., and Hoepner, A. G. F. (2011). *“SRI Funds: Does more social mean less financial performance?”* Foundation for Economy and Ecology.
- Bodie, Z., Kane, A., and Marcus, A. (2014). Investments. 10th edition. New York: McGrawHill Education.
- Capelle-Blancard, G., and Monjon, S. (2014). *“The Performance of Socially Responsible Funds: Does the Screening Process Matter?”* European Financial Management, 20(3): 494-520
- Carhart, M. M. (1997). *“On persistence in mutual fund performance”.* Journal of Finance 52, 57–82.
- Chen, J., Hong, H., Huang, M. and Kubik, J. D. (2004). *“Does Fund Size Erode Mutual Fund Performance? The Role of Liquidity and Organization”.* The American Economic Review, 94(5): 1276-1302.
- Core, J. E., Guay, R., Rusticus, T. (2006). *“Does weak governance cause weak stock returns? An examination of firm operating performance and investors’ expectations.”* Journal of Finance, 61(2), 655-687.
- European Sustainable Investment Forum (Eurosif). (2018). *Eurosif Market Study. 8th edition.* www.eurosif.org/wp-content/uploads/2018/11/European-SRI-2018-Study.pdf
- Freeman R. E. (1984). *“Strategic Management: A Stakeholder Approach.”* Pitman: Boston, MA.
- Friede, G., Busch, T., and Bassen, A. (2015). *“ESG and financial performance: aggregated evidence from more than 2000 empirical studies”.* Journal of Sustainable Finance & Investment, 5:4, 210-233
- Hong, H., and Kacperczyk, M. (2009). *“The price of sin: The effect of social norms on markets.”* Journal of Financial Economics, 93, 15–36.
- Jensen, M. C. (1967). *“The Performance Of Mutual Funds In The Period 1945-1964”.* Journal of Finance, 23 (2): 389-416.
- Kurtz, L. and diBartolomeo, D. (1999). *“Managing risk exposures of socially screened portfolios.”* Technical Report, Northfield Information Services, Boston, MA.

- Lee, D. D., Humphrey, J. E., Benson, K. L., and Ahn J. Y. K. (2010). *"Socially responsible investment fund performance: the impact of screening intensity"*. Accounting and Finance, 50: 351-370.
- Markowitz, H. (1952). *"Portfolio selection"*. Journal of Finance, 7 (1): 77-91.
- Nofsinger, J., Varma, A. (2014). *"Socially responsible funds and market crises"*. Journal of Banking & Finance, Volume 48, 180-193.
- Renneboog, L., Ter Horst, J., and Zhang, C. (2008). *"The price of ethics and stakeholder governance: The performance of socially responsible mutual funds"*. Journal of Corporate Finance, 14: 302-322.
- Sharpe, W. (1966). *"Mutual Fund Performance"*, Journal of Business, 39 (1), Part 2: 119-138.
- Walley, N., and Whitehead, B. (1994). *"It's not easy being green."* Harvard Business Review, 72: 46-51.