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IMPORTANCE OF THE FUND MANAGEMENT COMPANY IN THE PERFORMANCE OF SOCIALLY RESPONSIBLE MUTUAL FUNDS

Yacine Belghitar
Cranfield University

Ephraim Clark and Nitin Deshmukh
Middlesex University

Abstract

We compare the performance of a sample of U.K.-based socially responsible investment (SRI) funds with similar conventional funds using a matched-pair analysis based on size, age, investment universe, and fund management company (FMC). We find that both the SRI and conventional funds outperform the market index about 50% of the time, even after fees. Subsample tests show that the SRI funds in our sample perform better in the pre- and postfinancial crisis periods but underperform during the financial crisis period. Importantly, we find that the FMC plays a major role in the outperformance of both SRI and conventional funds.

JEL Classification: G1, G11

I. Introduction

Socially responsible investment (SRI) funds, whereby managers filter their investments based on environmental, social, and governance criteria, originated as a niche complement to conventional portfolio diversification. Since then it has grown by leaps and bounds to become a mainstream strategy in its own right. For example, as of 2015, SRI accounted for 11% ($3.74 trillion out of $33.7 trillion) of assets under management in the United States[1] and 27% (£1.235 trillion[2] out of £4.5 trillion[3]) of assets under management in the United Kingdom. The sheer size of the SRI market and the increasing attention that a growing number of retail and institutional investors are devoting to the theme makes it important to understand the extent to which SRI affects investment performance. This study looks at a sample of U.K.-based SRI funds and compares their performance with general market indices as well as with similar conventional funds that

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[1] The Forum for Sustainable and Responsible Investment (http://www.ussif.org/sribasics).

[2] UK Sustainable Investment and Finance Association (http://uksif.org/about-uksif/history/).

[3] Investment Management Association (http://www.investmentuk.org/research/ima-annual-industry-survey/key-statistics/).

have been carefully matched with respect to a set of criteria designed to isolate the effect of the socially responsible aspect of the investment.

Theory suggests that because SRI fund managers face a smaller or more restricted investment universe than conventional fund managers, the latter should be able to outperform the former. Studies of whether SRI mutual funds outperform or underperform relative to conventional funds provide inconclusive results. Numerous studies that find no conclusive evidence of over- or underperformance simply ignore the effect that factors such as fund size, age, investment universe, and so on, could have on fund performance. For example, Hamilton, Jo, and Statman (1993) compare the performance of U.S. SRI funds with randomly selected conventional funds. Luther and Matatko (1994) compare the performance of U.K. SRI funds with the FTSE All Share Index. Bauer, Koedijk, and Otten (2005) compare U.S., U.K., and German SRI funds with a large number of conventional funds (both dead and alive) in each country. Other studies, such as Mallin, Saadouni, and Briston (1995), Gregory, Matatko, and Luther (1997), and Kreander et al. (2005), use a matched-pair approach, whereby they first match the SRI funds with similar conventional funds based on size, age, investment universe, and country and then compare their performance. None of these studies consider the effect that the fund management company (FMC) could have on performance. Elton, Gruber, and Green (2007), however, show that fund returns are closely correlated within fund families. The FMC influences investment practices, access to research, the institutional framework, and the ability to attract and retain talented fund managers based not only on remuneration but also on the work culture and intellectual freedom offered to the managers within the organization. Thus, differences in performance between SRI and conventional funds could be due to the company managing the fund and not the nature of their investment universe.

In this article we investigate the role that the FMC plays in the relative performance of SRI versus conventional funds. We proceed in two steps. In step 1, to neutralize the effect of the FMC on fund performance, in the matching exercise we include the FMC as a selection criterion along with size, age, investment universe, and country. In step 2, we test whether the FMC is a significant determinant of the performance results obtained in step 1.

One salient characteristic of the SRI literature is the use of risk-adjusted returns to measure fund performance in asset pricing models such as the capital asset pricing model (Sharpe 1966; Lintner 1965), the Fama–French (1993) three-factor model, the Carhart (1997) four-factor model, and so on, to calculate excess returns reflected in alpha, which is then compared across SRI and conventional funds as well as the benchmark market index. The shortcomings of these models are well known. They introduce their own set of assumptions into the analysis, such as model specification and the normality of returns. They also neglect the higher moments beyond the mean and variance of return distributions. Since Mandelbrot (1963) raised the issue, it has been well documented that asset returns are generally not normally distributed. Furthermore, it has been shown that the third and the fourth moments of return distributions—skewness and kurtosis, respectively—do matter to investors, who show a preference for positive skewness and an aversion to kurtosis (see Kraus and Litzenberger 1976; Fang and Lai 1997; Dittmar 2002; Post, Levy, and Vlient 2008). Importantly, Clark and Kassimatis (2013) show that

when all moments of return distributions are considered, diversification opportunities increase significantly.

To address this issue and account for the non-normality we find in the vast majority of the fund return distributions in our sample, we follow Belghitar, Clark, and Deshmukh (2014) and use marginal conditional stochastic dominance (MCSD) as well as the mean, the variance, and the Carhart (1997) four-factor model to measure performance.[4] Under the general assumption that investors are risk averse, MCSD provides the probabilistic conditions under which all risk-averse investors prefer one risky asset to another. This preference, or "dominance," reflects the outperformance of one asset over another, and means that the utility of all risk-averse investors can be improved by increasing the share of the dominant asset at the expense of the dominated asset.[5] The advantage of MCSD analysis is that there are no assumptions regarding the model specification, the efficiency of the market portfolio, or the distributions of returns. The only assumption is that the investor utility functions are concave; that is, investors prefer more to less and are risk averse.

Our contribution is threefold. First, this is the first study to account for the non-normality that we find in the distribution of SRI fund returns. Using MCSD, a methodology that is robust to non-normally distributed returns, we find that both the SRI funds and the sample of carefully matched conventional funds outperform the market index about 50% of the time. These results are robust to management fees and entry loads. They stand in contrast to the absence of outperformance found in most studies and what we find in this article when using the alpha criterion in the Carhart (1997) four-factor model. Thus, MCSD captures what traditional measures could not. In our second contribution, we find that the FMC is a major determinant of outperformance for both SRI and conventional funds. Our third contribution is an outcome of subsample testing, where we find that the SRI funds in our sample perform better in the pre- and postcrisis periods but underperform during the crisis period.

II. Data and Methodology

Data

In this study we focus on the U.K. population of fund management companies that provide both conventional and SRI actively managed equity funds. To create the data set we first identify all the SRI mutual funds (also known as unit trusts and investment trusts) listed in the United Kingdom. For this, we use the Vigeo-Eiris website,[6] which lists names and details of U.K. SRI funds. Vigeo-Eiris defines an SRI fund as "any fund where the choice of investment is influenced by one or more social, environmental or other selection criterion." We exclude index funds as these are passive investments that are not

[4] See Shalit and Yitzhaki (1994) for a derivation of the MCSD methodology.

[5] The size of the diversification adjustment can also be calculated (see Clark and Jokung 1999; Clark, Jokung, and Kassimatis 2011). Shalit and Yitzakhi (2010) show how MCSD rules can be easily applied for portfolio choices. In this article we are only interested in identifying dominance.

[6] http://www.vigeo-eiris.com/en/

actively managed. We also exclude funds that do not meet the standard threshold of a minimum of 70% of assets invested in shares to qualify as an equity fund in the financial services industry (Kreander et al. 2005; Renneboog, Horst, and Zhang 2008). We cross-check our list for robustness with the list of SRI funds available on the Investment Management Association website.[7]

For the matched-pair methodology employed in this article, we use management company, age, size, investment objective, and investment universe to identify the conventional funds to be matched with the SRI funds. To this end we consult the prospectus of each SRI fund to determine the relevant information, including investment objectives, countries and sectors where they invest, benchmarks used, size, and age. We then use this information to find non-SRI funds run by the same management company with similar characteristics. Fund management companies of SRI funds that have no corresponding conventional fund match are excluded. The Appendix lists the names of the fund management companies together with the the name of the SRI fund and the matched conventional fund. There are 14 fund management companies, which provide us with 23 closely matched pairs of SRI and conventional funds. Of the 23 SRI funds in our sample, only 2 use a specialized SRI screen. The Aberdeen Responsible UK Equity fund, run by Aberdeen Asset Management, uses a negative screen to exclude stocks associated with alcohol, tobacco, gambling, weapons, and pornography. The Allianz RCM Global Eco Trends fund, run by Allianz Global Investors, uses a positive screen to include only stocks that are associated with the environment and climate change, such as companies engaged in renewable energy or organic farming. The other 21 funds use an all-inclusive SRI strategy that employs both positive and negative screens.

For the market index to rank the wealth outcomes in the MCSD procedure, we use the common benchmark index for both types of funds in each pair. Hence, each closely matched pair is composed of one market index, one SRI fund, and one conventional fund. Table 1 presents the fund characteristic statistics for the 46 funds used in this study. We use the paired-sample sign test to evaluate whether there are statistically significant differences between the two sets of fund-matching characteristics. The tests

TABLE 1. Descriptive Statistics of the Fund Characteristics.

	SRI Funds			Conventional Funds			Paired-Sample Sign Test
	Mean	Median	SD	Mean	Median	SD	*p*-value
Size (£M)	175.26	138.00	143.33	241.52	199.00	235.34	.093
Age (years)	15.62	13.37	7.82	18.47	15.97	10.61	.210
Fees (TER %)	1.26	1.50	0.42	1.40	1.50	0.37	.180
Entry load (%)	4.28	5.00	1.43	4.87	5.00	0.41	.143

Note: This table lists the key characteristics (size, age, and fees) of the funds studied as well as the results of a paired-sample sign test that checks for statistically significant differences between the two sets of funds. SRI = socially responsible investment; SD = standard deviation; TER = total expense ratio.

[7] http://www.investmentuk.org/research/ima-annual-industry-survey/key-statistics/

for all matching characteristics are not significant at the 5% level, suggesting that the two samples are closely matched.

Next, we collect monthly closing prices for the 46 funds from Datastream. Monthly closing prices are declared by the mutual fund companies after deducting their day-to-day expenses of transactions costs, depository fees, management fees, and other administrative expenses. Mutual funds issue two main classes of units based on dividend payouts, that is, income versus accumulating; the former pay out regular cash dividends to the investors whereas the latter reinvest the dividends back into the fund. While collecting data we ensure that we collect prices for similar types of fund units for both the SRI and conventional funds in each pair; that is, if we have an income type of SRI fund we collect data for the income class of units for the conventional fund as well. Each pair has its own data period over which performance is compared, and the data period is self-selected by the age of the younger fund within the pair. Next, following Shalit and Yitzhaki (1994) and Clark, Jokung, and Kassimatis (2011), we calculate an arithmetic return series for each fund and benchmark index.[8]

Using the Shapiro–Wilk test, we test each series for normality, skewness, and kurtosis. Table 2 lists the descriptive statistics for the market benchmarks and the 23 matched pairs in our sample. We find that the return series are non-normally distributed in 88% of the cases (61 of 69 return series are non-normally distributed) with statistically significant (at the 5% level) negative skewness in 67% of the cases (46 of 69 return series) and statistically significant (at the 5% level) excess kurtosis in 80% of the cases (55 of 69 return series). These findings substantially weaken the case for using a mean-variance approach to measure performance. Because it has been argued that equity data are more likely to be log-normally distributed, we also use the Shapiro–Wilk test to determine whether the data are log-normally distributed. We find similar results in both cases. We list in Table 2 test results for the arithmetic return series that are used in our study.

Methodology

Marginal Conditional Stochastic Dominance. Under the general assumption that investors are risk averse, MCSD analysis makes it possible to identify the cases where one type of fund is preferred to another by all risk-averse, utility-maximizing investors. MCSD preference, called "dominance" in MCSD terminology, means that the preferred (dominant) fund has outperformed the other. Stated more formally, given a portfolio α, asset k MCSD dominates asset j for all concave utility functions if and only if:

$$\mathrm{ACC}(k) \geq \mathrm{ACC}(j) \text{ with at least one strong inequality,} \tag{1}$$

where ACC is absolute concentration curves. In other words, asset k dominates asset j if the ACC of asset k lies above the ACC of asset j.[9]

[8] We must use arithmetic returns while working with MCSD because they are additive across asset weights within a portfolio, whereas log returns are not.

[9] For a detailed exposition, see Shalit and Yitzhaki (1994).

TABLE 2. Descriptive Statistics of Monthly Returns for the Fund Pairs.

Pair ID	Type	Min	Max	Mean	SD	Skewness	Excess Kurtosis[a]	Normal	S.Test[b]	K.Test[c]
1	M	−0.1850	0.1414	0.0013	0.0602	−0.381	1.131	Yes	Insig	Insig
	E	−0.1797	0.1544	0.0039	0.0607	−0.353	1.278	Yes	Insig	Sig
	C	−0.1855	0.1558	0.0037	0.0616	−0.384	1.421	No	Insig	Sig
2	M	−0.1850	0.1414	0.0043	0.0466	−0.424	1.420	No	Sig	Sig
	E	−0.1313	0.1363	0.0063	0.0472	−0.564	0.633	No	Sig	Sig
	C	−0.1452	0.1434	0.0055	0.0454	−0.330	1.077	No	Sig	Sig
3	M	−0.1957	0.0931	−0.0025	0.0596	−1.090	1.594	No	Sig	Sig
	E	−0.2690	0.1683	−0.0056	0.0805	−0.813	1.997	Yes	Sig	Sig
	C	−0.1443	0.1200	0.0009	0.0578	−0.416	0.470	Yes	Insig	Insig
4	M	−0.1850	0.1414	0.0007	0.0498	−0.465	1.454	No	Sig	Sig
	E	−0.1438	0.1739	0.0039	0.0566	−0.271	0.780	No	Insig	Insig
	C	−0.1517	0.1317	0.0027	0.0500	−0.262	0.785	No	Insig	Insig
5	M	−0.1957	0.0931	0.0008	0.0456	−1.110	2.322	No	Sig	Sig
	E	−0.2015	0.1358	0.0005	0.0621	−0.740	0.943	No	Sig	Sig
	C	−0.1558	0.1322	−0.0009	0.0568	−0.584	0.488	No	Sig	Insig
6	M	−0.1995	0.1800	0.0013	0.0669	−0.533	1.160	No	Sig	Sig
	E	−0.1583	0.1311	0.0036	0.0522	−0.796	1.337	No	Sig	Sig
	C	−0.2093	0.1733	0.0043	0.0608	−0.646	1.751	No	Sig	Sig
7	M	−0.1850	0.1414	0.0016	0.0513	−0.544	1.706	No	Sig	Sig
	E	−0.1363	0.1089	0.0029	0.0486	−0.735	0.853	No	Sig	Insig
	C	−0.1789	0.1962	0.0055	0.0571	−0.455	1.903	No	Sig	Sig
8	M	−0.1850	0.1414	0.0040	0.0465	−0.300	1.232	No	Sig	Sig
	E	−0.1202	0.1263	0.0051	0.0375	−0.444	1.351	No	Sig	Sig
	C	−0.1802	0.1549	0.0051	0.0432	−0.418	1.846	No	Sig	Sig
9	M	−0.1957	0.0931	0.0048	0.0416	−1.118	2.472	No	Sig	Sig
	E	−0.1639	0.1670	0.0052	0.0495	−0.252	0.853	Yes	Insig	Sig
	C	−0.1826	0.1636	0.0035	0.0493	−0.363	1.456	No	Sig	Sig
10	M	−0.1850	0.1414	0.0007	0.0498	−0.465	1.454	No	Sig	Sig
	E	−0.1646	0.1432	0.0011	0.0563	−0.396	0.722	No	Insig	Insig
	C	−0.1622	0.1178	0.0016	0.0506	−0.543	0.801	No	Sig	Insig
11	M	−0.1763	0.1693	0.0041	0.0519	−0.392	1.398	No	Sig	Sig
	E	−0.1682	0.1690	0.0043	0.0535	−0.229	1.227	No	Insig	Sig
	C	−0.1591	0.1436	0.0030	0.0474	−0.495	1.277	No	Sig	Sig
12	M	−0.1957	0.0931	0.0010	0.0448	−0.987	1.977	No	Sig	Sig
	E	−0.1802	0.1357	0.0010	0.0543	−0.636	0.981	No	Sig	Sig
	C	−0.2878	0.2588	0.0001	0.0930	−0.157	1.026	No	Insig	Sig
13	M	−0.1957	0.0931	0.0038	0.0446	−1.378	3.558	No	Sig	Sig
	E	−0.1195	0.0948	0.0055	0.0369	−0.829	1.754	No	Sig	Sig
	C	−0.1110	0.0657	0.0056	0.0345	−0.860	0.771	No	Sig	Insig
14	M	−0.1957	0.0931	0.0049	0.0438	−1.139	2.324	No	Sig	Sig
	E	−0.1778	0.1321	0.0042	0.0488	−0.878	1.727	No	Sig	Sig
	C	−0.1899	0.1462	0.0039	0.0513	−0.627	1.655	No	Sig	Sig
15	M	−0.1763	0.1693	0.0026	0.0548	−0.315	1.153	No	Insig	Sig
	E	−0.1551	0.1548	0.0041	0.0591	−0.503	0.651	No	Sig	Insig
	C	−0.1565	0.1543	0.0066	0.0555	−0.323	0.624	Yes	Insig	Insig
16	M	−0.1850	0.1414	0.0022	0.0578	−0.455	1.359	No	Insig	Sig
	E	−0.1457	0.1093	0.0008	0.0508	−0.731	1.378	No	Sig	Sig
	C	−0.1534	0.1289	0.0048	0.0514	−0.398	1.000	Yes	Insig	Insig
17	M	−0.1850	0.1414	0.0004	0.0510	−0.499	1.448	No	Sig	Sig
	E	−0.1700	0.1777	−0.0006	0.0573	−0.429	1.287	No	Insig	Sig
	C	−0.1439	0.1562	0.0025	0.0521	−0.441	0.577	No	Sig	Insig

(Continued)

TABLE 2. Continued.

Pair ID	Type	Min	Max	Mean	SD	Skewness	Excess Kurtosis[a]	Normal	S.Test[b]	K.Test[c]
18	M	−0.1850	0.1414	0.0011	0.0588	−0.402	1.213	No	Insig	Sig
	E	−0.1300	0.1378	0.0014	0.0538	−0.295	1.009	No	Insig	Insig
	C	−0.1597	0.1548	−0.0023	0.0528	−0.516	1.365	No	Insig	Sig
19	M	−0.1850	0.1414	0.0031	0.0519	−0.601	1.816	No	Sig	Sig
	E	−0.1515	0.1233	0.0037	0.0453	−0.725	1.914	No	Sig	Sig
	C	−0.1848	0.1871	0.0045	0.0543	−0.379	2.481	No	Insig	Sig
20	M	−0.1850	0.1414	0.0037	0.0467	−0.292	1.211	No	Insig	Sig
	E	−0.1898	0.1798	0.0053	0.0496	−0.349	2.149	No	Sig	Sig
	C	−0.1334	0.1563	0.0055	0.0444	−0.220	1.118	No	Insig	Sig
21	M	−0.3975	0.1414	0.0033	0.0525	−1.658	11.836	No	Sig	Sig
	E	−0.2701	0.1548	0.0029	0.0475	−0.973	4.999	No	Sig	Sig
	C	−0.3415	0.1563	0.0053	0.0493	−1.255	8.648	No	Sig	Sig
22	M	−0.1850	0.1414	0.0047	0.0505	−0.621	2.247	No	Sig	Sig
	E	−0.1715	0.1248	0.0077	0.0500	−0.793	2.081	No	Sig	Sig
	C	−0.1735	0.1580	0.0106	0.0530	−0.444	2.060	No	Insig	Sig
23	M	−0.1957	0.0931	−0.0035	0.0541	−1.090	1.981	No	Sig	Sig
	E	−0.1836	0.1971	0.0030	0.0686	−0.147	1.573	Yes	Insig	Sig
	C	−0.1855	0.1082	0.0017	0.0562	−0.849	1.358	No	Sig	Sig

Note: E = socially responsible investment; C = conventional; M = market; SD = standard deviation; Normal = normal distribution.

[a]For a normal distribution, the value of the excess kurtosis statistic calculated by SPSS is zero.

[b]S.Test in SPSS checks to see if the skewness calculated is statistically significant at the 5% level.

[c]K.Test in SPSS checks to see if the kurtosis calculated is statistically significant at the 5% level.

To implement the MCSD test, we follow Shalit and Yitzhaki (1994) and proceed as follows. Each fund pair is matched to its corresponding market index. This gives three assets for each fund comparison: one SRI fund, one conventional fund, and one market index with N monthly return observations in each series. The market index represents the wealth index.[10] We sort the monthly returns of the wealth index from lowest to highest and match them with the monthly return of the respective fund for the same month. Next, each of the terms in both fund return series (SRI and conventional) is multiplied by $1/N$ to obtain equally weighted returns. We now take the cumulative sum of this weighted returns series for each fund; that is, each term in the cumulative sum series is the sum of all previous terms of the weighted returns series. For example, the third term of the cumulative return series of fund A is the sum of the first, second, and third terms from the weighted return series for fund A. This cumulative return series for fund A is known as the ACC for fund A. Similarly, we calculate the ACC for the other fund. Next we compare the two ACCs calculated above at each of the N points. According to MCSD criteria, a fund dominates the other if its ACC is either equal to or lies above the ACC of the other at all the points, with at least one point where it lies above. The absence of

[10]It should be noted that following Shalit and Yitzhaki (1994), the returns on the market index proxy for monthly changes in individual wealth. In this setting, any monotone transformation of individual wealth is appropriate.

dominance indicates the absence of outperformance. We repeat the aforementioned procedure for all 23 pairs of SRI and conventional funds.

We also compare the performance of both types of funds with the respective market index. To this end we calculate the ACC of the market index following the same procedure detailed above. The ACC of the market is called the absolute Lorenz curve (Shorrocks 1983; Shalit and Yitzhaki 1994). We now compare this absolute Lorenz curve at each point in time with the ACC of the two funds (SRI and conventional) within each of the 23 sets. The decision criteria are the same. Dominance indicates outperformance. The absence of dominance indicates the absence of outperformance.

Four-Factor Alphas. To allow for comparison with previous studies and to check the robustness of our results, we calculate alphas for all funds using the Carhart (1997) four-factor model:[11]

$$r_{i,t} - r_{f,t} = \alpha_i + \beta_{i,mkt}\left(r_{m,t} - r_{f,t}\right) + \beta_{i,val}VAL_t + \beta_{i,size}SIZE_t + \beta_{i,mom}MOM_t + \varepsilon_{i,t} \quad (2)$$

where

$r_{i,t}$ = return of fund i at time t;
$r_{f,t}$ = risk-free rate at time t;
$r_{m,t}$ = return of the market at time t;
α_i = excess return or four-factor alpha for fund i;
$\beta_{i,mkt}$ = market beta for fund i;
$\beta_{i,val}$ = value factor beta for fund i;
$\beta_{i,size}$ = size factor beta for fund i;
$\beta_{i,mom}$ = momentum factor beta for fund i; and
$\varepsilon_{i,t}$ = random error term at time t.

The alphas represent the excess return remaining after the effect of the four risk factors has been accounted for. Significant positive alphas indicate that the asset has outperformed the market, and significant negative alphas indicate that the asset has underperformed the market. We test the statistical significance of the alphas using the t-test and the White (1980) and Newey–West (1987) standard errors, which are robust to heteroskedasticity and serial correlation.

III. Results and Analysis

Comparative Performance

Column 3 of Table 3 reports the four-factor alphas. There is no underperformance and little evidence of outperformance by either type of fund. This is consistent with

[11] For more details on calculating the factors, see Carhart (1997). In our case, the four factors for global portfolios are obtained from Kenneth French's website (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html) and the four factors for the United Kingdom are obtained from Gregory, Tharayan, and Christidis (2013).

TABLE 3. Performance Testing: Summary of Results.

Pair ID	Type	Four-Factor Alpha	MCSD Test (E vs. C)	MCSD Test (E vs. M)	MCSD Test (C vs. M)
1	Market (M)	NA			
	SRI (E)	0.003134**			
	Conventional (C)	0.002976**	NO DOM	NO DOM	NO DOM
2	Market (M)	NA			
	SRI (E)	0.001979			
	Conventional (C)	0.001015	**E DOM C**	**E DOM M**	**C DOM M**
3	Market (M)	NA			
	SRI (E)	−0.004232			
	Conventional (C)	0.001634	**C DOM E**	NO DOM	**C DOM M**
4	Market (M)	NA			
	SRI (E)	0.005053			
	Conventional (C)	0.003038	NO DOM	NO DOM	**C DOM M**
5	Market (M)	NA			
	SRI (E)	0.002089			
	Conventional (C)	0.001588	NO DOM	NO DOM	NO DOM
6	Market (M)	NA			
	SRI (E)	0.001832			
	Conventional (C)	0.003698	NO DOM	**E DOM M**	NO DOM
7	Market (M)	NA			
	SRI (E)	0.001637			
	Conventional (C)	0.004117	NO DOM	**E DOM M**	NO DOM
8	Market (M)	NA			
	SRI (E)	0.000284			
	Conventional (C)	0.000552	NO DOM	**E DOM M**	**C DOM M**
9	Market (M)	NA			
	SRI (E)	0.002190			
	Conventional (C)	−0.000194	**E DOM C**	**E DOM M**	NO DOM
10	Market (M)	NA			
	SRI (E)	0.001253			
	Conventional (C)	0.000896	NO DOM	NO DOM	NO DOM
11	Market (M)	NA			
	SRI (E)	0.001239			
	Conventional (C)	−0.000354	NO DOM	**E DOM M**	NO DOM
12	Market (M)	NA			
	SRI (E)	0.001467			
	Conventional (C)	0.005289	NO DOM	NO DOM	NO DOM
13	Market (M)	NA			
	SRI (E)	0.002936			
	Conventional (C)	0.002824	NO DOM	**E DOM M**	**C DOM M**
14	Market (M)	NA			
	SRI (E)	0.000660			
	Conventional (C)	0.000696	NO DOM	NO DOM	NO DOM
15	Market (M)	NA			
	SRI (E)	0.002270			
	Conventional (C)	0.004533	NO DOM	NO DOM	**C DOM M**
16	Market (M)	NA			
	SRI (E)	−0.000881			
	Conventional (C)	0.002796**	NO DOM	NO DOM	**C DOM M**
17	Market (M)	NA			
	SRI (E)	0.000106			
	Conventional (C)	0.003277**	**C DOM E**	NO DOM	**C DOM M**
18	Market (M)	NA			
	SRI (E)	0.000714			
	Conventional (C)	−0.004106	NO DOM	**E DOM M**	NO DOM
19	Market (M)	NA			
	SRI (E)	0.000605			
	Conventional (C)	0.001608	NO DOM	**E DOM M**	NO DOM

(Continued)

TABLE 3. Continued.

Pair ID	Type	Four-Factor Alpha	MCSD Test (E vs. C)	MCSD Test (E vs. M)	MCSD Test (C vs. M)
20	Market (M)	NA			
	SRI (E)	0.003262			
	Conventional (C)	0.002044**	NO DOM	**E DOM M**	**C DOM M**
21	Market (M)	NA			
	SRI (E)	−0.000374			
	Conventional (C)	0.002068**	NO DOM	NO DOM	**C DOM M**
22	Market (M)	NA			
	SRI (E)	0.003625			
	Conventional (C)	0.007748**	**C DOM E**	**E DOM M**	**C DOM M**
23	Market (M)	NA			
	SRI (E)	0.006440			
	Conventional (C)	0.003713	NO DOM	NO DOM	**C DOM M**

Note: DOM = marginal conditional stochastic dominance (MCSD). In 3 of 23 cases the conventional fund dominates the socially responsible investment (SRI) fund, and in 2 of 23 cases the SRI fund dominates the conventional fund. In the rest of the cases there is no dominance. In 11 of 23 cases the SRI fund dominates the market index. In 12 of 23 cases conventional funds dominate the market index. In the rest of the cases there is no dominance. Cases of dominance have been highlighted using boldface.
**Significant at the 5% level.

previous studies conducted on the U.K. market (Mallin, Saadouni, and Briston 1995; Gregory, Matatko, and Luther 1997; Kreander et al. 2005). In 6 of 23 cases, significant positive alphas suggest that conventional funds outperform the market, whereas in only 1 case the SRI fund outperforms the market. In the only case where the SRI alpha is significant the conventional alpha is also significant but lower. Based on this, we can conclude that SRI funds outperform the market and the conventional funds in only 1 case, whereas the conventional funds outperform the market in 6 cases and the SRI funds in 5 cases.

When we use MCSD to make the comparison, the conventional fund dominates the SRI in 3 of 23 cases and the SRI fund dominates the conventional fund in 2 of 23 cases. In all other cases there is no dominance. This implies there is no widespread outperformance either way, which is consistent with previous studies conducted on the U.K. market (Mallin, Saadouni, and Briston 1995; Gregory, Matatko, and Luther 1997; Kreander et al. 2005).

The situation changes considerably when we compare fund performance with market performance. The SRI fund dominates the market index in 11 of 23 cases whereas conventional funds dominate the market index in 12 of 23 cases. Interestingly, the market index never dominates any fund, either SRI or conventional. This finding is contrary to previous studies, such as Mallin, Saadouni, and Briston (1995) and Kreander et al. (2005), who find that on average both the SRI and conventional funds underperform the market. This result also runs counter to mean-variance intuition and the efficient market hypothesis that a well-diversified market index should not be dominated by any other asset. One potential explanation for why the MCSD results differ so markedly from the mean-variance results is that the mean-variance approach fails to capture the effects of non-normality in the return

distributions documented above that are reflected in the higher moments, such as skewness and kurtosis.[12]

The implication of our results is that although there is little evidence of outperformance associated with a specific fund type, half the funds in our sample, both SRI and conventional, are managing their portfolios efficiently enough to outperform the market over long periods. We pursue this reasoning in the next section where we deal with entry loads.

Controlling for Entry Loads

Mutual funds charge two types of fees, operational expenses and entry loads. Operational expenses are day-to-day expenses, such as depository fees, salaries, bonuses, data, research, and trading costs, that are reported as a percentage of assets under management in the total expense ratio (TER). Because the TER fees are incorporated into the net asset value or closing price that the funds declare on a daily basis, our results already reflect this aspect of fees. Entry loads, however, are not accounted for.

Entry loads are one-time fees paid when units are first purchased. These do not apply to institutional investors because they buy in bulk, but they do apply to retail investors. Entry loads typically represent around 5% of the purchase price. Table 1 summarizes the entry loads charged to retail investors by the funds in our study. To account for entry loads, we spread their costs on a monthly basis over the entire data period of the fund using the formula: Monthly load = Entry load/N, where N is the number of months in the data period under consideration. We then deduct the monthly load from the monthly returns of the fund to obtain the retail investor's monthly net return. The result of this procedure is that the effect of the entry load diminishes as the holding period increases. Thus, after accounting for all fees, fund outperformance for institutional investors and those exempted from entry loads is unaffected. For retail investors subject to entry loads, however, fund outperformance might be affected.

To complete the analysis, we recognize that there are costs involved with investing in the market portfolio. Hence, we adjust the returns on the market portfolio to reflect these costs. To this end, we select the market index tracking fund with the lowest TER in the United Kingdom[13] and allocate these costs month by month in the formula: Monthly cost = TER/12. Finally, we deduct the monthly costs from the monthly returns on the market index. We use the returns on the market index to avoid issues associated with tracking error.[14] For example, if the tracking error of the tracking fund with respect to the market is large, the poor performance of the market could be attributed to the inefficiency of the tracking fund rather than the market itself.

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[12] For example, successful active management could produce a more non-normal return distribution. It is shown that risk-averse investors show a preference for positive skewness and an aversion to kurtosis (see Kraus and Litzenberger 1976; Fang and Lai 1997; Dittmar 2002; Post, Levy, and Vlient 2008).

[13] To estimate the costs of investing in the market index, we use the following index funds (respective TERs are stated in parentheses): L&G UK (0.56%) for the FTSE All Share, the L&G Global (1.15%) for the MSCI World, the L&G EU (0.84%) for the FTSE World EU ex UK, and the Aviva International (0.96%) for the FTSE World.

[14] Tracking error is an estimate of how much the returns of an index fund deviate from the returns of the actual market index that the fund aims to mimic.

Using the series net of fund fees, we repeat the entire procedure as detailed above; that is, we make MCSD comparisons for SRI versus conventional funds, SRI funds versus the market, and conventional funds versus the market. We find that the results remain unchanged in all but one case, that is, pair ID 18, where dominance disappears after fees are taken into account. However, even in this case the market does not dominate the fund.

These results that include the all-in costs are further evidence of fund management ability for both fund types and are indirect evidence that the dominant funds are earning their fees. This conclusion is reinforced by the fact that our sample includes only surviving funds. Funds with inferior performance that do not justify their fees disappear. Although this survivorship bias is making the fund industry as a whole look better than it really is, we cannot ignore the fact that many actively managed funds are routinely outperforming the market. Furthermore, the 23 pairs have varying data periods ranging from 55 months to 286 months, which implies that our results are not sample based; that is, outperformance of the market is not limited to a particular period.

IV. Further Analysis

Comparative Fund Management Ability

To compare the relative abilities of SRI and conventional fund management in our sample, we draw on the results of Belghitar, Clark, and Deshmukh (2014), who find that SRI indices MCSD underperform similar and carefully matched conventional indices (MCIs). The implication is that the SRI investment universe is inferior to that of the conventional universe and that SRI funds start off with an inherent disadvantage. However, our results show that the performance of SRI and conventional funds is similar. Overall, there is no systematic dominance of either type of fund (only three cases of dominance in total) and each type of fund dominates the market in almost equal proportions (about 50%). This is preliminary evidence that the SRI fund management in our sample is superior to conventional fund management because, despite choosing from an inferior investment universe, they manage to match the performance of the conventional funds.

To pursue this hypothesis, we use MCSD to compare the performance of SRI funds with the MCIs used in Belghitar, Clark, and Deshmukh (2014). Belghitar, Clark, and Deshmukh find that these MCIs dominate the SRI indices, which constitute the investment universe for SRI funds. Thus, if SRI funds do indeed have superior management ability, the MCIs should not be able to dominate them. This is exactly what we find: in 20 of 23 cases there is no dominance either way. In 2 of 23 cases an SRI fund dominates the MCI, whereas in 1 case the MCI dominates an SRI fund. This is strong evidence in favor of SRI fund management ability, as the MCIs are able to dominate the SRI indices but fail to dominate the SRI funds. This is especially impressive given that we have incorporated fund management fees and expenses into our calculations. Thus, it seems that the price to be paid by risk-averse investors for socially responsible investing indicated by Belghitar, Clark, and Deshmukh (2014) is offset in practice in our sample by fund management ability.

Subsample Testing

We now turn to the question of whether our results are sensitive to differing economic conditions. More specifically, we look at the last 10 years of data that roughly span one complete trade cycle and divide it into three sample periods: the precrisis period from August 2001 to December 2006, the financial crisis period from January 2007 to December 2009, and the postcrisis period from January 2010 to July 2011. In each subperiod we first compare the performance of the selected SRI funds with their matched conventional counterparts. We then compare the performance of both the selected SRI and conventional funds with the market index.

Financial Crisis Period. We start with the financial crisis period from January 2007 to December 2009. The results in Table 4 show that in 2 of 23 cases an SRI fund dominates the matched conventional fund, whereas in 4 of 23 cases the matched conventional fund dominates the SRI fund. In the remaining cases there is no dominance. This is consistent with our previous results for the entire period that show there is no strong evidence in favor of dominance either way.

When we compare funds with the market index, a conventional fund dominates the market index in 13 of 23 cases, whereas the latter never dominates the former. This is also consistent with earlier findings for the entire period when the conventional funds dominate the market in 12 of 23 cases. Interestingly, 11 of the 12 dominant funds over the entire period also dominate over the crisis period. The situation changes when we look at SRI funds. An SRI fund dominates the market index in only 3 of 23 cases, down from 11 of 23 cases over the entire period. Thus, it looks like the SRI funds are sensitive to financial crises whereas conventional funds are not. Also, conventional funds that dominate over the whole period tend to dominate during the crisis as well.

Precrisis Period. Over the precrisis period things are different. Table 5 reports the results for the precrisis period from August 2001 to December 2006. An SRI fund dominates the matched conventional fund in 5 of 21 cases (up from 2 of 23 over the whole period), whereas in 2 of 21 cases (down from 3 of 23) the matched conventional fund dominates the SRI fund. In the rest of the cases there is no dominance. This is preliminary evidence that SRI funds perform better than their conventional counterparts during the

TABLE 4. Subsample: Financial Crisis Period, January 2007–December 2009.

Number of Cases in Which:	
An SRI fund dominates a conventional fund	2/23
A conventional fund dominates an SRI fund	4/23
An SRI fund dominates the market	3/23
A conventional fund dominates the market	13/23
The market dominates an SRI fund	0/23
The market dominates a conventional fund	0/23

Note: This table reports results of comparing performance of socially responsible investment (SRI) funds versus conventional funds and both sets of funds with their respective benchmark market index during the financial crisis period. In 2 of 23 cases an SRI fund dominates the matched conventional fund and in 4 of 23 cases the matched conventional fund dominates the SRI fund. In 3 of 23 cases an SRI fund dominates its benchmark market index, and in 13 of 23 cases a conventional fund dominates its benchmark market index. In rest of the cases there is no dominance.

TABLE 5. Subsample: Precrisis Period, August 2001–December 2006.

Number of Cases in Which:	
An SRI fund dominates a conventional fund	5/21
A conventional fund dominates an SRI fund	2/21
An SRI fund dominates the market	9/21
A conventional fund dominates the market	4/21
The market dominates an SRI fund	0/21
The market dominates a conventional fund	0/21

Note: This table reports results of comparing performance of socially responsible investment (SRI) funds versus conventional funds and both sets of funds with their respective benchmark market index during the precrisis period. In 5 of 21 cases an SRI fund dominates the matched conventional fund, and in 2 of 21 cases the matched conventional fund dominates the SRI fund. In 9 of 21 cases an SRI fund dominates its benchmark market index, and in 4 of 21 cases a conventional fund dominates its benchmark market index. In rest of the cases there is no dominance.

good times. In 9 of 21 cases an SRI fund dominates the market index (down from 11 of 21 over the entire period), which is consistent with earlier findings for the entire period, whereas the latter never dominates the former. Of the 9 dominant funds, 6 are the same ones that dominate over the entire period. A conventional fund dominates the market index in only 4 of 21 cases (down from 13 of 23 in the crisis period and 12 of 23 when the whole sample period is considered), whereas the market dominates a conventional fund in only 1 of 21 cases. Thus, the present evidence suggests that during the precrisis good times, SRI funds performed better than they did during the crisis and better than conventional funds, which performed much worse than they did during the crisis.

Postcrisis Period. Table 6 reports results for the postcrisis period from January 2010 to July 2011. In 7 of 23 cases an SRI fund dominates the matched conventional fund (up from 5 of 23 in the precrisis period), whereas in 2 of 23 cases the matched conventional fund dominates the SRI fund. In the rest of the cases there is no dominance. This provides more evidence that SRI funds do better during good times.

When we compare individual funds with the benchmark we find that in 19 of 23 cases an SRI fund dominates the market index (up from 3 of 23 in the crisis period and 11

TABLE 6. Subsample: Postcrisis Period, January 2010–July 2011.

Number of Cases in Which:	
An SRI fund dominates a conventional fund	7/23
A conventional fund dominates an SRI fund	2/23
An SRI fund dominates the market	19/23
A conventional fund dominates the market	8/23
The market dominates an SRI fund	0/23
The market dominates a conventional fund	0/23

Note: This table reports results of comparing performance of socially responsible investment (SRI) funds versus conventional funds and both sets of funds with their respective benchmark market index during the postcrisis period. In 7 of 23 cases an SRI fund dominates the matched conventional fund, and in 2 of 23 cases the matched conventional fund dominates the SRI fund. In 19 of 23 cases an SRI fund dominates its benchmark market index, and in 8 of 23 cases a conventional fund dominates its benchmark market index. In rest of the cases there is no dominance.

of 23 over the entire sample period), whereas the latter never dominates the former. Conventional funds dominate the market index in 8 of 23 cases (down from 13 of 23 in the crisis period and 12 of 23 overall), whereas the latter never dominates the former.

Over the entire sample period the performance of SRIs and conventional funds are equivalent. However, SRI funds perform relatively worse during the crisis period and relatively better pre- and postcrisis. The weakness in SRI performance during the crisis period is consistent with Munoz, Vargas, and Marco (2014) who find a similar result for European green fund managers during the financial crisis period. Because SRI funds exclude "sin" stocks and conventional funds do not, the weakness in SRI funds is also consistent with Hong and Kacperczyk (2009), who show that "sin" stocks are resilient to economic downturns, and Ferruz, Munoz, and Vargas (2012), who find that the exclusion of "sin" stocks hurts the performance of religious SRI funds.

Investment Strategy: Market Timing

Our findings suggest that shrewd investors can benefit from a strategy that chooses to invest in SRI funds during good times, that is, during the pre- and postcrisis subperiods, but switches their investments to conventional funds during bad times, that is, during the financial crisis period. To test this strategy, we form two equally weighted portfolios, one composed of all the SRI funds (EWP-S) and the other composed of all the conventional funds (EWP-C). Next, we assume that shrewd investors would invest their money in EWP-S from August 2001 to December 2006, switch their investments to EWP-C from January 2007 to December 2009, and switch them back again to EWP-S from January 2010 to July 2011. We name this the switching strategy portfolio (SSP). Using MCSD, we compare the performance of SSP over the entire 10-year period from August 2001 to July 2011 with two global broad-based market indices: FTSE All World and MSCI World. We find that SSP dominates both market indices. Thus, the SSP strategy is utility increasing. Table 7 reports the MCSD test results and descriptive statistics. The strategy's mean return is 57.69% higher than the FTSE World and 86.36% higher than the MSCI World. Thus, besides being utility increasing, the SSP strategy is also wealth increasing.

Determinants of Dominance

To test the role of the FMC in fund outperformance, we run a logistic regression where the dependent variable is MCSD Dominance, which is a binary variable that equals 1 when dominance exists, and 0 otherwise. To proxy for fund management ability, we

TABLE 7. Switching Strategy Portfolio (SSP) versus the MSCI World and FTSE World.

Name	Mean	SD	Skewness	Excess Kurtosis[a]	MCSD Test Results
SSP	0.0041	0.0474	−0.5180	0.880	NA
MSCI World	0.0022	0.0447	−0.9820	1.748	SSP dominates MSCI World
FTSE World	0.0026	0.0539	−0.2510	1.253	SSP dominates FTSE World

Note: This table reports results of comparing performance between the SSP and the MSCI World and FTSE World Indices.

[a]For a normal distribution, the value of the excess kurtosis statistic calculated by SPSS is zero.

TABLE 8. Determinants of Dominance.

	Dependent Variable = MCSD Dominance					
	Mean	SD	CumTER	Age	Size	Constant
Coefficient	1,138.44*	−755.92**	28.14**	−1.07**	0.01	43.85**
p-value	.038	.014	.030	.012	.422	.015

Note: This table reports results of the logistic regression for the determinants of marginal conditional stochastic dominance. CumTER = cumulative total expense ratio.
**Significant at the 5% level.
*Significant at the 10% level.

follow Livingston and Zhou (2015), who find a positive and significant relation between fund expenses and fund performance, and use the TER. The intuitive rationale for this is that rational investors will pay a higher fee only if the fund offers better management. The practical rationale is that the TER reflects the FMC's influence on investment practices, access to research, institutional framework, and ability to attract and retain talented fund managers. Because dominance is established over several years, we must use cumulative TER to estimate the total fees paid by the investors. The control variables are mean, standard deviation, age, and size. Mean and standard deviation are included, as they represent the necessary conditions for dominance. Age captures the survivorship bias and size captures any scale economies.

Table 8 reports results for the logistic regression. We find that after controlling for fund age and size and the necessary MCSD conditions, cumulative TER is a statistically significant explanatory variable with a *p*-value of .03. This is evidence that the FMC is an important determinant of outperformance and fund management ability.

V. Conclusion

This study compares the performance of a sample of U.K.-based SRI funds with similar conventional funds, and it investigates the role that the FMC plays in the performance of these funds. Using MCSD criteria to account for the non-normality reflected in the empirical distributions of the sample funds and indices, we find that both the SRI funds and the sample of carefully matched conventional funds outperform the market index about 50% of the time. There is, however, no evidence that one type of fund outperforms the other. SRI funds perform relatively better in the pre- and postcrisis periods whereas conventional funds perform relatively better in the crisis period. These results are robust to management fees and entry loads. They stand in contrast to the absence of outperformance found in most studies and what we find in this article when using the alpha criterion in the Carhart (1997) four-factor model. Furthermore, our findings suggest that shrewd investors can benefit from investing in SRI funds during good times and switching their investments to conventional funds during bad times.

Importantly, we find that the FMC is a major determinant of outperformance for both fund types. Thus, the outperformance is due to common characteristics shared by

both types of funds, which reinforces the finding that neither type of fund outperforms the other. Belghitar, Clark, and Deshmukh (2014) show that SRI indices underperform similar conventional indices. Thus, SRI funds start off with a disadvantage; that is, they are generated from an inferior investment universe. Hence, although there is no evidence of dominance by either type of fund, the aforementioned fact suggests that the FMC is more important to the success of the SRI funds in our sample than it is to the success of conventional funds.

Appendix: List of Fund Management Companies and Socially Responsible Investment (SRI) and Conventional Funds

Fund Management Company	SRI Fund	Matched Conventional Fund	Benchmark Index
Aberdeen Asset Management	Aberdeen Responsible UK Equity	Aberdeen UK Equity	FTSE All Share
AEGON Asset Management	AEGON SRI Equity	AEGON UK Equity	FTSE All Share
Allianz Global Investors	Allianz RCM Global Eco Trends	Allianz RCM Dynamic Growth	MSCI World
Aviva Investors	Aviva Investors UK SRI	Aviva Investors UK Growth	FTSE All Share
Aviva Investors	Aviva Investors S. F. Absolute Growth	Aviva Investors World Leaders	MSCI World
Aviva Investors	Aviva Investors S. F. European Growth	Aviva Investors European Equity	FTSE W. EU ex UK
Aviva Investors	Aviva Investors S. F. UK Growth	Aviva Investors UK Focus	FTSE All Share
F&C Asset Management	F&C Stewardship Income	F&C UK Equity Income	FTSE All Share
F&C Asset Management	F&C Stewardship International	F&C Global Growth	MSCI World
Family Asset Management	Family Charities SRI	Family Asset Trust	FTSE All Share
Henderson Global Investors	Henderson Global Care Growth	Henderson Global Innovation	MSCI World
Henderson Global Investors	Henderson Global Care Managed	Henderson Multi Manager Managed	MSCI World

(Continued)

Appendix: Continued.

Fund Management Company	SRI Fund	Matched Conventional Fund	Benchmark Index
Henderson Global Investors	Henderson Industries of the Future	Henderson International	MSCI World
Jupiter Asset Management	Jupiter Ecology	Jupiter Global Managed	FTSE World
Jupiter Asset Management	Jupiter Environmental Income	Jupiter Growth & Income	FTSE All Share
Legal & General Investment Management	Legal & General SRI	Legal & General Growth	FTSE All Share
Marlborough Fund Managers	Marlborough SRI	Marlborough UK Equity Income	FTSE All Share
Premier Asset Management	Premier SRI	Premier UK Strategic Growth	FTSE All Share
Scottish Widows	Scottish Widows Environmental Investor	Scottish Widows UK Select Growth	FTSE All Share
Scottish Widows	Scottish Widows SRI	Scottish Widows UK Select Growth	FTSE All Share
Scottish Widows	Halifax SRI	Scottish Widows Global Growth	FTSE World
Standard Life Investments	Standard Life UK SRI	Standard Life UK Opportunities	FTSE All Share
St. James Place Wealth Management	St. James Place SRI	St. James Place Global	MSCI World

Note: Data sourced from Vigeo-Eiris, Investment Management Association, and Fund Fact Sheets.

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