

Green Investing: Is it Different from Socially Responsible Investing?

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ABSTRACT

In this paper we examine the performance of green funds, socially responsible funds (SRI), and index funds over time. For parametric and non-parametric tests, we find that there is no real performance difference between green funds and SRI funds nor are there differences for index funds and green funds. We do find marginal performance differences between index funds and SRI funds, with the index funds showing better performance. Comparing SRI and green funds have not been examined previously in the literature and these results provide useful information for individual investors' mutual fund decisions.

JEL Classification: G11, G23

Keywords: Socially Responsible Investing; Mutual Fund; Sustainable Investing; Green Investing

I. INTRODUCTION

One of the growing trends in investing is green or sustainable investing. Many new mutual funds and electronic traded funds have been created to take advantage of investment opportunities in this area. Green investing appeals to investors that desire to invest in areas that reflect their values on the environment, climate change, and a sustainable economy. Additionally, there exist sector green electronic-trade funds (ETFs) that investors may view as an opportunity to invest in alternative energy or in sustaining the economy such as water infrastructure ETFs. In this paper, we look at the similarities and differences between green investing and the more conventional socially responsible investing (SRI). Our goal is to look at the issues that will be raised by investors in terms of performance differences between green and SRI investing.

II. BACKGROUND

Exactly what is green or sustainable investing? Joseph F. Keefe (2007) defined sustainable investing as "... the full integration of environmental, social, and governance (ESG) factors into financial analysis and decision-making." For the purposes of this research, however, it is better to let investment funds that define themselves as green funds, be green funds. We do not include in our discussion specialty areas of sustainable investing such as water infrastructure ETFs. Investors looking for green funds will find that they have a myriad of different investment portfolios just as investors in SRI funds have many investment opportunities.

Many articles have investigated socially responsible investing. As socially responsible investing developed, the general view was that additional constraints on an investor's portfolio would negatively impact the risk/return trade-off with respect to an optimal portfolio (Rudd, 1981 and Grossman and Sharp, 1986). As empirical research was conducted, a general consensus developed in the literature is that there is no significant difference between the performance of conventional equity money managers and socially responsible funds (Bello, 2005; Goldreyer, Ahmed, and Diltz, 1999). Statman (2000) compared the Domini Social Index (DSI) and the S&P index during the 1990-98 periods. His research showed that the DSI index performed better during this period; but that socially responsible funds and conventional funds performed worse than the S&P 500 index.

Early in their development socially responsible mutual funds were concerned with being "environmentally sound, those that are engaged in alternative energy sources..." (Hamilton, Jo, and Statman, 1993). As evidence of global warming has increased and it is likely to be caused by human activity; there has been a large increase in the number of green funds (See Appendix 1). Stocks included in green funds may be excluded from socially responsible funds because of other management practices or products that they may have. Keefe (2007, 2008) has published two articles on sustainable investing and socially responsible investing. Keefe's thesis is that green investing is better defined and is not as restrictive as socially responsible investing.

According to the Social Investment Forum, SRI has grown very quickly to the level of over \$2.71 trillion in assets. This level of investment in SRI implies approximately eleven percent of funds are invested in SRI (2007 Report on Socially Responsible Investing Trends in the United States: Executive Summary and Schueth

2003). The investment in green funds is now growing rapidly as well. It would not be surprising in the near future to see more investors and institutions demanding that the companies be environmentally responsible. It is important, therefore, to research the differences between SRI, green investing, and general mutual funds to compare the performance characteristics on these investments.

III. NATURE OF GREEN INVESTING

It is not clear to what degree green investing overlaps SRI. If green investing is largely a subset of SRI, then green investors would be less diversified and therefore subject to more risk than in SRI. For example the Green Century Equity Fund indexes to Domini Social Index but is listed as a green fund. One of the screens for the Domini Social Index is that the companies are environmentally responsible. If green investing is more broadly defined to include companies that are environmentally conscious but do not meet other values criteria, then the equities included in green funds might constitute a larger universe of stocks. Additionally, investments in areas such as solar power and wind turbines may be green but be ran by management that does not meet other socially responsible criteria.

Green funds not only attract investors that are driven by their personal values in investing, but also by investors who believe that during particular time periods green investing is a sector that will produce a favorable return/risk tradeoff. While a person's values may be different with respect to industries like tobacco, alcohol, and military defense; green investing in general is more likely to be embraced and accepted. Investor's interest in green investing is likely to increase as global warming continues and as more concern is raised about sustainable growth.

The older green mutual funds have a very strong social-value component to their philosophy. New ETFs invest in sectors related to alternative energy areas like solar energy and wind power technologies, so they also can be classified as green funds. Sustainable investing could be broader if one would include water infrastructure funds. These sector ETFs have a much narrower universe of equities in which they invest. Investors need to combine them with other green funds if they seek a diversified portfolio to match their desire to invest in green-only companies.

Jennings and Martin (2007) found that socially responsible funds on average were 19% more expensive than a conventional fund. These authors proposed enhanced indexing techniques that would lower fund expenses. Sauer (1997) also found that measuring the Domini Social Index removes the compounding negative effects of active management fees on SRI performance.

While the literature appears to support under-performance of SRI funds compared to index funds, past research has not addressed the performance of green funds. Additionally, the results of SRI research appear to be mixed. Our study is intended to extend the previous research by examining both green funds and SRI funds over a more current time period. Our sample includes four mutual fund classification categories over a ten-year investment horizon.

A. Hypothesis

The main hypothesis to be tested is that funds with objectives of Socially Responsible Investing (SRI) and Green Funds (GF) don't have significantly different performance from mutual funds as a whole. This hypothesis will be tested for the years 1998 through 2008.

B. Data

The mutual fund data used in this study is from the July 2008 Morningstar Principia Pro Plus for Mutual Funds. This database contains historical information of over 20,000 mutual funds through December 31, 2007 year-end. Data and information are provided on investment objective, total return, income and capital gain distributions, annual expense ratios, fund size, load, and turnover.

This study groups the funds into four broad investment categories: Growth/Growth and Income (GGI), Small and Mid Cap (SMC), Balanced (BAL), and International (IS) categories. The final sample contains 74 funds in the categories described above. Since SRI funds and green funds are relatively new investment opportunities, sample sizes are small for funds with a ten-year return history (1998-2007). To increase our sample size we include two green funds that were established in 2000 and ten SRI funds that were established in 1999. We include six green funds, 43 SRI funds, and 25 index funds in our sample. In order to include a comparable index fund sample, we include Vanguard, Fidelity, and Dreyfus index funds that represent each of our four broad investment categories.

C. Methodology

Since most SRI and green funds are relatively new, we utilize a 10-year sample of funds. We examine one-year, three-year, five-year, and ten-year returns for each of the fund categories (Indexes, Green Funds, SRI Funds) and in total. We also examine subsample categories (GGI, SMC, BAL, and IS) for each of the fund categories. We utilize several return measures: annualized total return, return after-tax on distributions, and load adjusted returns.

The methodology employed to test the hypothesis of a difference in performance (returns) involves a comparison of the cross sectional mean returns of the SRI funds, green funds, and S&P 500 Index funds for the period 1998 through 2007 for each individual year and over the full ten-year period. Differences of mean statistics and the non-parametric Mann-Whitney test statistic are computed.

D. Results

Table 1 presents the summary statistics for the full sample and for each fund category. As one scans this table, the return figures appear to be comparable, so the statistical analysis will determine significant differences. SRI funds have the highest turnover at 54.349% and the index funds are the largest funds. Both SRI funds and green funds have front-end loads and 12b-1 fees, whereas the index funds do not.

Table 1A
Summary statistics

		Tot Ret 12 Mo	Tot Ret Annld 3 Yr	Tot Ret Annld 5 Yr	Tot Ret Annld 10 Yr	Ret After Tax on Distrib 1 Yr	Ret After Tax on Distrib 5 Yr	Ret After Tax on Distrib 10 Yr	Load Adj Ret 12 Mo	Load Adj Ret 3 Yr	Load Adj Ret 5 Yr	Load Adj Ret 10 Yr
Indexes	N	25	25	25	23	25	24	22	25	25	25	23
	Mean	-11.244	7.656	11.998	5.604	-11.742	11.685	4.991	-11.264	7.647	11.993	5.601
	Median	-11.810	6.110	11.530	5.640	-12.110	11.240	4.720	-11.810	6.110	11.530	5.640
	Std. Deviation	4.838	5.244	5.038	3.096	4.747	5.137	3.084	4.770	5.213	5.019	3.087
	Minimum	-20.420	1.280	6.790	2.130	-20.770	5.950	1.830	-20.420	1.280	6.790	2.130
	Maximum	4.030	25.840	29.240	15.680	3.090	29.130	15.420	3.510	25.630	29.110	15.620
Green Funds	N	6	6	6	4	6	6	3	6	6	6	4
	Mean	-9.112	8.270	10.192	4.778	-11.023	9.300	3.873	-10.570	7.675	9.827	4.518
	Median	-9.425	7.820	10.140	5.025	-9.985	8.785	4.260	-9.645	6.985	9.615	4.770
	Std. Deviation	3.902	6.711	5.030	2.932	3.941	4.596	3.118	3.956	6.417	4.768	2.735
	Minimum	-15.010	1.760	4.720	0.960	-15.840	4.400	0.580	-15.320	1.760	4.720	0.960
	Maximum	-4.670	18.090	17.840	8.100	-5.620	16.090	6.780	-5.040	16.190	16.700	7.570
SRI Funds	N	43	43	43	34	43	43	30	43	43	43	34
	Mean	-8.559	5.552	8.191	4.356	-11.470	7.122	3.323	-10.435	4.816	7.737	4.099
	Median	-8.760	4.990	7.510	3.815	-12.010	6.870	2.880	-10.530	4.230	7.300	3.430
	Std. Deviation	6.092	4.113	3.589	2.719	6.296	3.604	2.636	6.273	4.061	3.547	2.765
	Minimum	-21.850	-2.990	2.770	-0.450	-22.150	1.370	-2.180	-21.850	-4.550	1.770	-0.810
	Maximum	1.210	18.090	17.840	11.340	0.300	16.430	11.160	1.210	16.190	16.700	11.340
Total Sample	N	74	74	74	61	74	73	55	74	74	74	61
	Mean	-9.511	6.483	9.639	4.854	-11.526	8.801	4.020	-10.726	6.004	9.345	4.693
	Median	-10.535	5.010	8.505	4.660	-12.010	7.550	3.560	-10.835	4.860	8.175	4.360
	Std. Deviation	5.627	4.806	4.545	2.892	5.596	4.685	2.906	5.598	4.820	4.585	2.931
	Minimum	-21.850	-2.990	2.770	-0.450	-22.150	1.370	-2.180	-21.850	-4.550	1.770	-0.810
	Maximum	4.030	25.840	29.240	15.680	3.090	29.130	15.420	3.510	25.630	29.110	15.620

Table 1B
Summary statistics

		Sharpe Ratio	Beta 3 Yr	Turnover Ratio	Front Load	Deferred Load	12b-1 Current	Total Assets \$MM
Indexes	N	25	25	25	25	25	25	25
	Mean	0.290	1.049	13.280	0.000	0.000	0.000	22,911
	Median	0.200	1.000	9.000	0.000	0.000	0.000	12,377
	Std. Deviation	0.314	0.130	9.581	0.000	0.000	0.000	31,641
	Minimum	-0.150	0.840	3.000	0.000	0.000	0.000	473
	Maximum	1.010	1.530	34.000	0.000	0.000	0.000	106,761
Green Funds	N	6	6	6	6	6	6	6
	Mean	0.287	1.022	39.667	1.583	0.000	0.125	335
	Median	0.345	1.080	24.500	0.000	0.000	0.125	115
	Std. Deviation	0.499	0.167	48.722	2.453	0.000	0.137	534
	Minimum	-0.330	0.780	0.000	0.000	0.000	0.000	31
	Maximum	0.850	1.180	132.000	4.750	0.000	0.250	1,406
SRI Funds	N	43	43	43	43	43	43	43
	Mean	0.148	0.944	54.349	2.041	0.000	0.175	377
	Median	0.140	0.950	48.000	0.000	0.000	0.250	167
	Std. Deviation	0.338	0.119	38.484	2.567	0.000	0.153	492
	Minimum	-0.460	0.580	0.000	0.000	0.000	0.000	5
	Maximum	0.850	1.150	153.000	5.750	0.000	0.500	2,481
Total Sample	N	74	74	74	74	74	74	74
	Mean	0.207	0.986	39.284	1.314	0.000	0.112	7,986
	Median	0.140	0.990	29.000	0.000	0.000	0.000	509
	Std. Deviation	0.347	0.135	37.552	2.261	0.000	0.146	21,083
	Minimum	-0.460	0.580	0.000	0.000	0.000	0.000	5
	Maximum	1.010	1.530	153.000	5.750	0.000	0.500	106,761

Table 2A
Means for subsamples

	Category	Tot Ret 12 Mo	Tot Ret Annlzd 3 Yr	Tot Ret Annlzd 5 Yr	Tot Ret Annlzd 10 Yr	Ret After Tax on Distrib 1 Yr	Ret After Tax on Distrib 5 Yr	Ret After Tax on Distrib 10 Yr	Load Adj Ret 12 Mo	Load Adj Ret 3 Yr	Load Adj Ret 5 Yr	Load Adj Ret 10 Yr
Indexes	GGI	-12.781	4.540	7.822	2.962	-13.094	7.324	2.361	-12.781	4.540	7.822	2.962
	SMC	-12.819	5.458	11.853	7.364	-13.405	11.413	6.291	-12.819	5.458	11.853	7.364
	Balanced	-4.860	4.700	6.790	4.660	-5.690	5.950	3.560	-4.860	4.700	6.790	4.660
	International	-8.379	14.596	18.279	7.732	-8.967	17.800	7.406	-8.453	14.566	18.260	7.720
	Total Sample	-11.244	7.656	11.998	5.604	-11.742	11.685	4.991	-11.264	7.647	11.993	5.601
Green Funds	GGI	-10.383	6.097	8.333	2.915	-12.307	7.323	0.580	-11.790	5.540	7.983	2.660
	SMC	-8.760	1.760	5.150	5.180	-9.250	4.860	4.260	-8.760	1.760	5.150	5.180
	International	-7.380	14.785	15.500	8.100	-9.985	14.485	6.780	-9.645	13.835	14.930	7.570
	Total Sample	-9.112	8.270	10.192	4.778	-11.023	9.300	3.873	-10.570	7.675	9.827	4.518
SRI Funds	GGI	-9.219	5.427	8.090	4.332	-11.353	7.255	3.876	-10.426	4.948	7.794	4.183
	SMC	-6.765	4.803	8.352	5.133	-10.795	7.255	3.056	-10.198	3.523	7.562	4.753
	Balanced	-7.454	3.493	5.925	3.574	-11.007	4.511	1.971	-9.362	2.765	5.473	3.259
	International	-10.213	12.535	14.195	4.770	-14.315	12.680	4.295	-13.523	11.125	13.335	4.243
	Total Sample	-8.559	5.552	8.191	4.356	-11.470	7.122	3.323	-10.435	4.816	7.737	4.099
Total Sample	GGI	-10.235	5.257	8.042	3.809	-11.883	7.277	3.260	-11.148	4.894	7.818	3.699
	SMC	-10.224	5.177	10.352	6.408	-12.286	9.631	5.047	-11.696	4.629	10.014	6.245
	Balanced	-7.347	3.449	5.933	3.873	-10.418	4.660	2.402	-8.937	2.843	5.556	3.628
	International	-8.789	13.991	16.595	6.786	-10.769	15.715	6.550	-10.196	13.395	16.232	6.544
	Total Sample	-9.511	6.483	9.639	4.854	-11.526	8.801	4.020	-10.726	6.004	9.345	4.693

Table 2B
Means for subsamples

	Category	Sharpe Ratio	Beta 3 Yr	Turnover Ratio	Front Load	Deferred Load	12b-1 Current	Total Assets \$MM
Indexes	GGI	0.079	1.003	8.889	0.000	0.000	0.000	47,559
	SMC	0.154	1.126	22.500	0.000	0.000	0.000	7,135
	Balanced	0.100	0.840	26.000	0.000	0.000	0.000	9,079
	International	0.746	1.050	6.571	0.000	0.000	0.000	11,225
	Total Sample	0.290	1.049	13.280	0.000	0.000	0.000	22,911
Green Funds	GGI	0.170	1.117	63.000	1.583	0.000	0.167	496
	SMC	-0.330	0.860	35.000	0.000	0.000	0.000	53
	International	0.770	0.960	7.000	2.375	0.000	0.125	236
	Total Sample	0.287	1.022	39.667	1.583	0.000	0.125	335
SRI Funds	GGI	0.158	0.955	57.043	1.348	0.000	0.148	459
	SMC	0.098	0.952	60.000	3.542	0.000	0.275	84
	Balanced	-0.043	0.903	51.000	2.075	0.000	0.149	390
	International	0.643	0.973	38.750	3.688	0.000	0.250	307
	Total Sample	0.148	0.944	54.349	2.041	0.000	0.175	377
Total Sample	GGI	0.139	0.981	45.171	1.021	0.000	0.111	12,574
	SMC	0.130	1.051	38.571	1.518	0.000	0.118	4,113
	Balanced	-0.055	0.894	47.583	1.729	0.000	0.124	1,086
	International	0.718	1.012	16.538	1.500	0.000	0.096	6,175
	Total Sample	0.207	0.986	39.284	1.314	0.000	0.112	7,986

Table 2 presents summary mean returns (and values) for the major categories and subcategories of funds. International green funds have the highest 10-year annualized return (8.10%) and GGI green funds have the lowest at 2.915%. The international index funds have the highest 10-year after-tax return (7.406%) and 10-year load-adjusted return (7.720%). The GGI green funds have the lowest 10-year after-tax return (0.580%) and 10-year load-adjusted return (2.660%). GGI green funds have the highest turnover at 63% and international index funds have the lowest turnover at 6.571%. International SRI funds have the highest front-end load at 3.688% and SMC SRI funds have the highest 12b-1 fee at 0.275/%. The largest funds are the GGI index funds (47,559) and the smallest funds are the SMC green funds (53).

Table 3 presents the results of the difference of means tests on the three major fund categories (index funds, green funds, and SRI funds). The last three columns of the table show the P-values for the statistic. Notice that there are no significant differences between index funds and green funds for any of the return categories. There are also no significant differences between green funds and SRI funds for any of the return categories. Only index funds/SRI funds show a significant difference and there are only differences for the 5-year return period.

Table 4 presents the annual returns for each year of our 10-year test period for each of the three fund categories and in total. Table 5 presents the results of the difference of means test for the annual periods and fund categories. There are four years with significant differences between index funds and SRI funds, two years with significant differences for index and green funds, and only one year for green and SRI funds. Table 6 presents the mean annual return data for the three fund categories and each of the subcategories.

Table 7 presents the results of the non-parametric Mann-Whitney test for significant differences between our three fund categories for each of our return variables. The results of the Mann-Whitney test reinforce the results of the parametric tests. There no significant differences between green funds and SRI funds and there are only two years with significant differences between index funds and green funds. The Mann-Whitney test shows nine return periods (out of 21) with significant differences for index funds and SRI funds.

E. Discussion

The lack of performance differences between green funds and socially responsible funds relates to the short time period that green funds have been operating. Socially responsible funds look for green stocks to include and the older green funds include a socially responsible component. Since green investing now includes ETFs that include only the solar industry or only alternative energy, companies included in these funds may be green but may not be considered socially responsible. For example nuclear power could be alternative energy to fossil fuels, but never considered for a socially responsible fund. As time passes and more data becomes available, the differences in green funds and socially responsible funds may grow wider.

Table 3
Significant difference in mean values

	Mean Index	Mean Green	Mean SRI	Sig. Diff. I-G	Sig. Diff. I-S	Sig. Diff. G-S
Tot Ret 12 Mo	-11.244	-9.112	-8.559	0.702	0.166	0.974
Tot Ret Annlzd 3 Yr	7.656	8.270	5.552	0.960	0.218	0.425
Tot Ret Annlzd 5 Yr	11.998	10.192	8.191	0.646	0.003	0.559
Tot Ret Annlzd 10 Yr	5.604	4.778	4.356	0.869	0.283	0.962
Ret After Tax on Distrib 1 Yr	-11.742	-11.023	-11.470	0.962	0.982	0.984
Ret After Tax on Distrib 5 Yr	11.685	9.300	7.122	0.472	0.000	0.502
Ret After Tax on Distrib 10 Yr	4.991	3.873	3.323	0.816	0.123	0.950
Load Adj Ret 12 Mo	-11.264	-10.570	-10.435	0.964	0.844	0.998
Load Adj Ret 3 Yr	7.647	7.675	4.816	1.000	0.062	0.378
Load Adj Ret 5 Yr	11.993	9.827	7.737	0.527	0.001	0.523
Load Adj Ret 10 Yr	5.601	4.518	4.099	0.788	0.166	0.963
Sharpe Ratio	0.290	0.287	0.148	1.000	0.266	0.655
Beta 3 Yr	1.049	1.022	0.944	0.892	0.006	0.376
Turnover Ratio	13.280	39.667	54.349	0.216	0.000	0.592
Total Assets \$MM	22,911	335	377	0.031	0.000	1.000

Table 4
Mean annual returns

	Annual Return 2007	Annual Return 2006	Annual Return 2005	Annual Return 2004	Annual Return 2003	Annual Return 2002	Annual Return 2001	Annual Return 2000	Annual Return 1999	Annual Return 1998
Indexes	7.357	17.807	9.826	16.432	35.571	-17.463	-9.808	-6.167	24.136	17.460
Green Funds	14.972	16.743	7.648	10.625	36.072	-28.193	-14.483	5.842	38.833	12.295
SRI Funds	7.746	12.156	5.311	10.801	27.757	-19.979	-9.043	-0.274	29.840	18.047
Total Sample	8.201	14.437	7.026	12.689	31.071	-19.795	-9.743	-1.752	28.328	17.437

Table 5
Significant difference in mean annual returns

	Mean Index	Mean Green	Mean SRI	Sig. Diff. I-G	Sig. Diff. I-S	Sig. Diff. G-S
Annual Return 2007	7.357	14.972	7.746	0.095	0.980	0.100
Annual Return 2006	17.807	16.743	12.156	0.950	0.011	0.356
Annual Return 2005	9.826	7.648	5.311	0.696	0.008	0.635
Annual Return 2004	16.432	10.625	10.801	0.038	0.000	0.997
Annual Return 2003	35.571	36.072	27.757	0.993	0.005	0.119
Annual Return 2002	-17.463	-28.193	-19.979	0.009	0.411	0.047
Annual Return 2001	-9.808	-14.483	-9.043	0.657	0.964	0.540
Annual Return 2000	-6.167	5.842	-0.274	0.241	0.285	0.664
Annual Return 1999	24.136	38.833	29.840	0.609	0.735	0.821
Annual Return 1998	17.460	12.295	18.047	0.834	0.991	0.786

Table 6
Mean annual return for each category

	Category	Annual Return 2007	Annual Return 2006	Annual Return 2005	Annual Return 2004	Annual Return 2003	Annual Return 2002	Annual Return 2001	Annual Return 2000	Annual Return 1999
Indexes	GGI	5.607	15.593	5.328	11.219	29.234	-21.953	-11.907	-9.241	21.417
	SMC	3.299	14.330	9.458	19.324	39.845	-16.266	0.315	4.430	19.640
	Balanced	6.160	11.020	4.650	9.330	19.870	-9.520	-3.020	-2.040	13.610
	International	14.417	25.597	16.770	20.843	41.076	-14.191	-19.647	-18.414	38.328
	Total Sample	7.357	17.807	9.826	16.432	35.571	-17.463	-9.808	-6.167	24.136
Green Funds	GGI	14.263	11.503	9.483	11.007	32.423	-27.833	-18.580	-15.745	35.235
	SMC	3.100	7.750	2.490	1.540	63.470	-37.070	-13.630	13.240	76.390
	International	21.970	29.100	7.475	14.595	27.845	-24.295	-8.765	23.730	8.470
	Total Sample	14.972	16.743	7.648	10.625	36.072	-28.193	-14.483	5.842	38.833
SRI Funds	GGI	7.347	12.609	5.954	11.045	26.523	-20.111	-7.310	-2.140	23.781
	SMC	9.705	5.822	6.055	12.203	33.030	-25.488	-19.428	-3.620	60.765
	Balanced	4.744	9.267	1.689	7.570	27.354	-16.262	-3.745	4.974	21.854
	International	14.608	26.278	9.550	15.373	27.955	-20.253	-16.680	2.355	27.017
	Total Sample	7.746	12.156	5.311	10.801	27.757	-19.979	-9.043	-0.274	29.840
Total Sample	GGI	7.492	13.281	6.096	11.087	27.726	-21.247	-9.458	-4.820	23.834
	SMC	6.044	10.684	7.999	16.272	36.924	-20.219	-8.146	0.980	37.265
	Balanced	4.725	9.287	2.003	7.214	29.740	-17.434	-4.508	5.078	26.998
	International	15.638	26.345	13.118	18.198	35.003	-17.611	-17.060	-3.199	31.240
	Total Sample	8.201	14.437	7.026	12.689	31.071	-19.795	-9.743	-1.752	28.328

Table 7
Nonparametric tests for significant differences between index, green, and SRI fund variables using Mann-Whitney test

	Signif Diff Btwn Index & Green			Signif Diff Btwn Index & SRI			Signif Diff Btwn Green & SRI		
	Mann-Whitney U	Z	Significance	Mann-Whitney U	Z	Significance	Mann-Whitney U	Z	Significance
Tot Ret 12 Mo	48	-1.3500	0.177	385	-1.9397	0.052	124.5	-0.1373	0.891
Tot Ret Annlzd 3 Yr	68	-0.3500	0.726	414.5	-1.5645	0.118	110	-0.5796	0.562
Tot Ret Annlzd 5 Yr	64	-0.5501	0.582	280	-3.2753	0.001	99	-0.9152	0.360
Tot Ret Annlzd 10 Yr	41	-0.3414	0.733	294	-1.5778	0.115	60	-0.3805	0.704
Ret After Tax on Distrib 1 Yr	61	-0.7001	0.484	517.5	-0.2544	0.799	123.5	-0.1678	0.867
Ret After Tax on Distrib 5 Yr	55	-0.8814	0.378	221	-3.8576	0.000	90.5	-1.1743	0.240
Ret After Tax on Distrib 10 Yr	27	-0.5017	0.616	207	-2.2782	0.023	42	-0.1879	0.851
Load Adj Ret 12 Mo	64	-0.5500	0.582	461.5	-0.9667	0.334	126.5	-0.0763	0.939
Load Adj Ret 3 Yr	65	-0.5001	0.617	356	-2.3086	0.021	110	-0.5796	0.562
Load Adj Ret 5 Yr	58	-0.8501	0.395	243	-3.7459	0.000	95.5	-1.0218	0.307
Load Adj Ret 10 Yr	40	-0.4096	0.682	272	-1.9357	0.053	61	-0.3330	0.739
Annual Return 2007	53	-1.1001	0.271	491	-0.5915	0.554	87.5	-1.2659	0.206
Annual Return 2006	66	-0.4500	0.653	278	-3.3006	0.001	105.5	-0.7168	0.473
Annual Return 2005	63	-0.6001	0.548	257	-3.5678	0.000	99.5	-0.8998	0.368
Annual Return 2004	33	-2.1004	0.036	218.5	-4.0576	0.000	127.5	-0.0458	0.964
Annual Return 2003	62	-0.6501	0.516	233	-3.8732	0.000	78.5	-1.5404	0.123
Annual Return 2002	22	-2.6503	0.008	445	-1.1765	0.239	65.5	-1.9369	0.053
Annual Return 2001	43	-1.6003	0.110	511	-0.3371	0.736	80.5	-1.4793	0.139
Annual Return 2000	48.5	-0.5400	0.589	350.5	-1.9379	0.053	104.5	-0.1013	0.919
Annual Return 1999	34	-0.8192	0.413	382	-0.4973	0.619	53	-0.8567	0.392
Annual Return 1998	40	0.0000	1.000	327	-0.0550	0.956	61	-0.2446	0.807
Sharpe Ratio	68.5	-0.3257	0.745	423.5	-1.4504	0.147	109	-0.6102	0.542
Beta 3 Yr	69.5	-0.2762	0.782	291	-3.1411	0.002	85	-1.3439	0.179
Turnover Ratio	49.5	-1.2771	0.202	153	-4.8929	0.000	90.5	-1.1747	0.240
Total Assets \$MM	2	-3.6504	0.000	20	-6.5823	0.000	118.5	-0.3202	0.749

IV. CONCLUSION

This paper examines the performance of green funds, socially responsible funds, and index funds over time. For parametric and non-parametric tests, we find that there is no real performance difference between green funds and SRI funds nor are there differences between index funds and green funds. We do find marginal performance differences between index funds and SRI funds, with the index funds showing better performance. Of course the largest issue with this research is sample size. Since SRI funds and green funds are relatively new investment opportunities, sample sizes are small for funds with a ten-year return history. We include six green funds, 43 SRI funds, and 25 index funds in our sample.

Green funds and SRI funds not only attract investors that are driven by their personal values in investing, but also by investors who believe that green investing is a sector that will produce a favorable return/risk tradeoff. In this paper we show that investors in SRI funds are likely to lag the performance of index funds, while the trade-off between green funds and index funds is not as clear. Additionally there appear to be no performance differences between green funds and SRI funds. Green funds have not been examined previously in the literature and these results provide useful information for individual investor mutual fund decisions.

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APPENDIX 1
Green Funds and ETFs*

Name	Symbol	Inception Date	Type
New Alternatives Fund	NALFX	1982	MF
Green Century Balanced	GCBLX	1992	Balanced
Green Century Equity	GCEQX	1995	MF
Portfolio 21	PORTX	1999	MF
Calvert Large Cap	CLGAX	2000	MF
Spectra Green	SPEGX	2000	MF
Powershares Wilderhill Clean Energy ETF	PBW	2004	ETF
Guinness Atkinson Alternative Energy	GAAEX	2006	MF
Alianz RCM Global Eco Trends Fund		2007	MF
PowerShares Cleantech Portfolio	PZD	2006	ETF
Claymore/LGA Green ETF	GRN	2006	ETF
Calvert Global Alternative Energy Fund	CGAEX	2007	MF
NASDAQ Clean Edge U.S. Liquid Series ETF	QCLN	2007	ETF
Market Vectors Global Energy ETF	GEX	2007	ETF
Powershares Global Clean Energy Portfolio	PBD	2007	ETF
ThinkGreen		2008	MF
Winslow Green Growth	WGGFX	2001/2002	MF
Ardour Solar Energy SM Index	SOLRX	2007	ETF
CLAYMORE/MAC GLOBAL	TAN	2008	ETF

*Note only green funds (not ETFs) that have been in existence since 2000 were included in the sample, leaving seven green funds. This table is included to show the universe of green funds and ETFs available.