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Socially Responsible Investing: Delivering competitive performance

SRI indexes delivered market-like returns and risk, while pursuing social goals.

Executive summary

- Growing interest in Socially Responsible Investing (SRI) raises an important question: Does pursuing social goals — limiting the range of potential investment opportunities — require sacrificing performance?
- A TIAA-CREF analysis of leading SRI equity indexes over the long term found no statistical difference in returns compared to broad market benchmarks, suggesting the absence of any systematic performance penalty.
- Moreover, incorporating environmental, social and governance (ESG) criteria in security selection did not entail additional risk. SRI indexes and their broad market counterparts had similar risk profiles, based on Sharpe Ratios and standard deviation measures.
- Although return patterns were *similar* over the long term, there were significant return and tracking error differences between SRI indexes and broad market benchmarks over shorter periods. By narrowing the range of eligible investments, the SRI process introduced biases that caused short-term index performance to deviate from broad market benchmarks, resulting in tracking error.
- SRI index construction methodology is an important determinant of tracking error. Investors should consider specific ESG methodology and the relevant market benchmark when selecting an SRI strategy.

Growing interest in SRI, but performance questions persist

Interest in socially responsible investing (SRI) is increasing rapidly. From 2003 to 2012, SRI assets in the U.S. grew 54% to reach \$3.31 trillion,¹ according to the Forum for Sustainable and Responsible Investment (US SIF Foundation). This represents roughly 10% of assets under professional investment management in the U.S. as tracked by Thomson Reuters Nelson.

SRI strategies apply various environmental, social and governance (ESG) criteria in selecting public companies for inclusion in a portfolio. The process of incorporating nonfinancial criteria restricts the range of investment opportunities, potentially limiting returns. On the other hand, companies that wisely manage ESG risks and opportunities may also improve financial measures, potentially enhancing stock performance.

The key question for investors: Does investing in an SRI strategy require sacrificing performance or taking on additional risk, compared to a broad market index?



Many studies on the performance of SRI mutual funds versus non-SRI funds have attempted to answer this question.² However, the range, variety and diversity of SRI fund management strategies make apples-to-apples comparisons difficult. Instead, TIAA-CREF sought answers through a simpler comparison, analyzing the performance of several leading SRI indexes versus broad market benchmarks. We focused on equity strategies because indexes with longer-term track records are readily available—and represent the majority of SRI assets. It is important to note that SRI indexes themselves are not perfectly comparable due to differences in index construction and ESG evaluation processes. However, they provide a close proxy for SRI as a strategy versus the broad market.

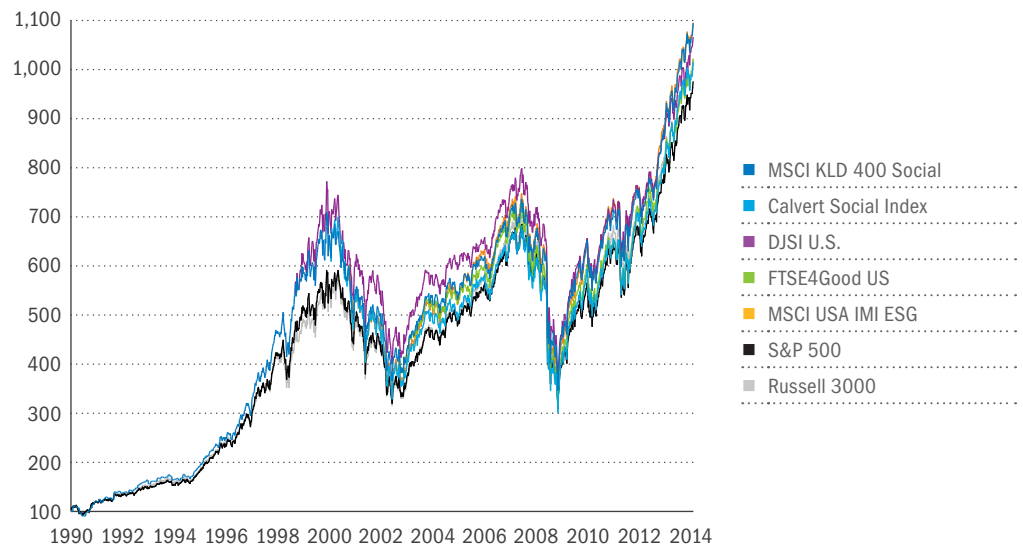
How SRI performed versus broad market indexes

We selected five widely known U.S. equity SRI indexes with track records of at least 10 years: Calvert Social Index, Dow Jones Sustainability U.S. Index (DJSI U.S.), FTSE4Good US Index, MSCI KLD 400 Social Index, and MSCI USA IMI ESG Index.³ We compared returns for these indexes with two widely recognized U.S. equity-based indexes, the Russell 3000 and S&P 500 indexes.⁴ We also examined volatility measures and calculated Sharpe ratios to understand risk-adjusted results. Finally, we compared index returns with respective benchmarks to determine tracking error rates. We also sought to determine whether differences in results were statistically significant or caused by random variation.

The result: our analysis found **no statistical difference** in SRI index returns compared to the two broad market benchmarks. In other words, SRI *can* achieve comparable performance over the long term without additional risk, despite using a smaller universe of securities meeting ESG criteria. Exhibit 1 illustrates the similarity of cumulative returns for SRI indexes and broad market benchmarks over the long term.

Exhibit 1: Comparing returns of SRI indexes and broad market indexes

Cumulative returns: Five U.S. SRI indexes vs. S&P 500 and Russell 3000 indexes



Data through 5/30/14. Series indexed to 100, inception dates: S&P 500, Russell 3000, and MSCI KLD 400 Social, 5/4/1990; DJSI U.S., 1/1/1999; Calvert Social Index, 4/28/2000; MSCI USA IMI ESG, 12/22/2000; and FTSE4Good US, 1/3/2003. MSCI indexes include aggregated, multisource histories prior to acquisition on 9/1/2010.

It is not possible to invest in an index. Performance for indices does not reflect investment fees or transactions costs.

Sources: FactSet Research Systems Inc., Morningstar, Inc., MSCI Inc., and TIAA-CREF

SRI returns were comparable to broad market indexes.

Returns for the SRI indexes were similar to each other and compared to the broad market. Ten-year average annual performance for the five U.S. SRI indexes ranged from 7.87% to 6.42% versus 7.78% and 8.23% for the S&P 500 and Russell 3000 indexes, respectively. The gap between best and worst average annual performance spanned 145 basis points. (Exhibit 2)

Exhibit 2: SRI index returns were comparable to broad market indexes

Index average annual returns (as of 6/30/2014)	■ Top performer ■ Bottom performer			
	1 Yr	3 Yr	5 Yr	10 Yr
MSCI USA IMI ESG	23.82%	16.07%	19.04%	7.87%
MSCI KLD 400 Social Index	23.32%	16.68%	18.51%	7.44%
Calvert Social Index	25.09%	17.52%	19.43%	7.48%
FTSE4Good US Index	25.54%	17.91%	18.49%	7.06%
DJSI U.S.	22.30%	14.84%	17.31%	6.42%
Range top/bottom performer	3.24%	3.07%	2.12%	1.45%
S&P 500 Index	24.61%	16.58%	18.83%	7.78%
Russell 3000 Index	25.22%	16.46%	19.33%	8.23%

Based on daily returns for periods ending 6/30/14.

Sources: FactSet, Morningstar, MSCI, and TIAA-CREF

More importantly, statistical analysis showed no meaningful difference in returns when comparing SRI indexes with relevant broad market indexes.⁵ Any return variations appeared to be random and not systematic. For the analysis, performance was measured from the period when weekly returns first became available for each index. Track records ranged from 11 years for FTSE4Good US Index, to 19 years for MSCI KLD 400 Social Index. Time periods were long enough to ensure results were statistically valid.

Volatility and risk-adjusted measures were also comparable:

Standard deviations for the SRI indexes clustered fairly closely together and were similar to the S&P 500 and Russell 3000 indexes:

- Average annualized standard deviations for the SRI indexes ranged from 15.4% to 17.03% over the past 10 years, compared to 16.36% and 16.96% for the S&P 500 and Russell 3000, respectively (Exhibit 3).
- The spreads between standard deviations for SRI indexes and benchmarks averaged only 30 basis points for the 10-year period.
- Even though some standard deviations topped 40% during the 2008–2009 market collapse, the maximum spread between SRI indexes and their benchmarks averaged only 1.83% for the 10-year period.

Meanwhile, *risk-adjusted returns* also showed little variation from broad market indexes. Sharpe ratios, or returns per unit of risk, also tracked fairly closely over various time periods, with average SRI index Sharpe ratios mirroring the underlying market or lagging only slightly.

- For the 10-year period, SRI index Sharpe ratios ranged between 0.74 and 0.82, compared with 0.86 and 0.85 for the Russell 3000 and S&P 500, respectively (Exhibit 3).

With standard deviations of returns and Sharpe ratios comparable between SRI indexes and benchmarks, this suggests that incorporating ESG criteria in investment decisions doesn't require taking on additional risk relative to broad market benchmarks.

Exhibit 3: Volatility measures and risk-adjusted returns were similar overall

Standard deviation and Sharpe ratios: SRI indexes and broad market benchmarks

Index	Average Annualized Standard Deviation (%)	Spread vs. benchmark for 10 Yr period (%)		Average Annual Sharpe ratio
	10 Yr	Avg.	Max.	10 Yr
Calvert Social Index*	17.01	0.05	1.61	0.78
DJSI U.S.**	15.40	0.96	2.87	0.74
FTSE4Good US**	16.57	0.22	2.50	0.77
MSCI KLD 400 Social**	16.14	0.22	1.13	0.81
MSCI USA IMI ESG*	17.03	0.07	1.05	0.82
SRI Index average	16.43	0.30	1.83	0.78
S&P 500	16.36			0.85
Russell 3000	16.96			0.86

* Benchmark: Russell 3000; ** Benchmark: S&P 500. Based on weekly returns for 10-year period through 5/30/14.

Sources: FactSet, Morningstar, MSCI, and TIAA-CREF

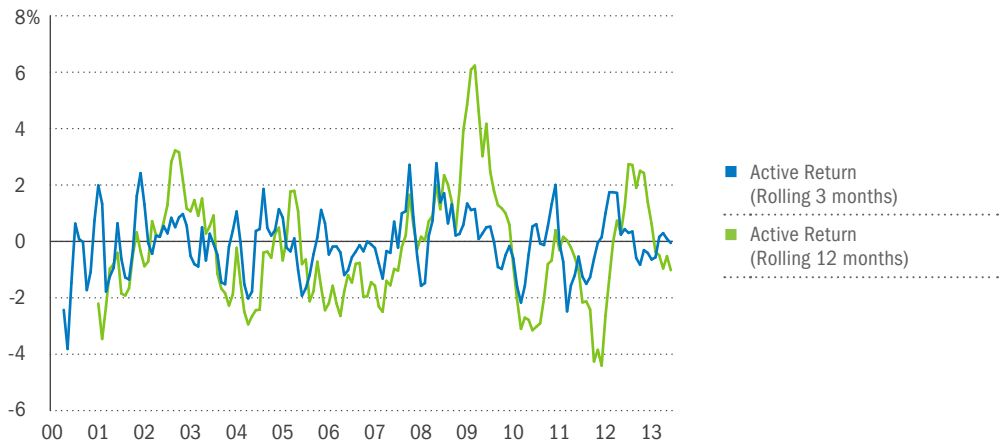
SRI indexes: Significant short-term performance variations

Although our results showed that index returns patterns were similar, they were not the same. In particular, performance variations increased significantly over short time periods, compared to broad market indexes. Short-term differences are to be expected because any strategy that does not replicate the index, such as the SRI process, introduces portfolio biases causing performance to deviate from broad market indexes.

Exhibit 4 shows an example of how variable short-term performance can be. Measured on a 3- and 12-month basis, the rolling active return of the MSCI USA IMI ESG index reveals considerable volatility, relative to an equivalent broad market benchmark, the Russell 3000 Index. This multicap SRI index outperformed by as much as 6% and underperformed by more than 4% on a 12-month basis.

Exhibit 4: SRI indexes subject to greater short-term performance variations

Rolling active return — MSCI USA IMI ESG vs. Russell 3000 (2001–2014)



Rolling returns calculated for 3-month and 12-month periods for MSCI USA IMI ESG for period 12/29/2000 – 5/30/2014 vs. Russell 3000 based on monthly returns.

Sources: FactSet, MSCI, and TIAA-CREF

SRI index tracking error rates varied measurably.

All the SRI indexes had performance that deviated from broad market indexes, as measured by their tracking error. An important question for investors is whether some SRI indexes more closely matched the performance of broad market benchmarks than others. We performed statistical analysis to determine whether the tracking error rates were similar or different across the five SRI indexes. Results showed that tracking error differences were statistically significant and, therefore, important for investors to consider.

We compared the MSCI USA IMI ESG Index and Calvert Social Index to the Russell 3000 Index because these SRI indexes include smaller-capitalization stocks. (MSCI actually benchmarks this SRI index against its own MSCI USA IMI Index.) The remaining SRI indexes were compared with the S&P 500 because they included primarily large-capitalization stocks. Among the indexes, the MSCI USA IMI ESG Index showed the lowest tracking error at 1.86%, and the DJSI U.S. had the highest at 3.56% (Exhibit 5). All tracking error rates were measured from the inception date for each index or first availability of weekly data through 5/30/14. Although time periods varied by index, all were sufficiently long to ensure statistical validity.

Exhibit 5: Tracking error variations were significant across SRI indexes

Tracking error rates since index inception through 5/30/14 (%)

SRI Index	Min	Max	AVG	ST DEV	Benchmark
MSCI USA IMI ESG	0.97	3.96	1.86	0.58	Russell 3000
MSCI KLD 400 Social	1.55	5.49	2.69	0.99	S&P 500
Calvert Social Index	1.33	5.46	2.83	1.07	Russell 3000
FTSE4Good US	1.68	6.02	2.96	1.03	S&P 500
DJSI U.S.	2.06	7.28	3.56	1.38	S&P 500

Weekly index total returns through 5/30/14. Beginning dates: MSCI KLD 400 Social, 11/11/1994; DJSI U.S., 1/8/1999; Calvert Social, 5/5/2000; MSCI USA IMI ESG, 4/1/2001; and FTSE4Good US, 1/10/2003. MSCI indexes include aggregated, multisource histories prior to acquisition on 9/1/2010. Dates reflect first availability of weekly returns after index inception date.

Sources: FactSet, Morningstar, MSCI, and TIAA-CREF

Average tracking error for the MSCI USA IMI ESG Index was meaningfully lower than for Calvert Social Index. For SRI indexes benchmarked to the S&P 500, the MSCI KLD 400 Social tracking error was lower than DJSI U.S. and FTSE4Good US by a statistically significant margin. However, there appears to be no statistical difference between tracking errors for DJSI U.S. and FTSE4Good US.⁶

The consistency of returns versus a selected benchmark is an important consideration for investors in measuring performance and managing risk. Tracking error does not introduce absolute risk *per se*, but is a source of relative risk versus a benchmark. Low tracking error indicates the index's performance and risk characteristics closely match the benchmark's profile.

Investors considering SRI strategies may be indifferent to the level of tracking error as long as long-term performance is comparable to the broad market. However, they should be aware of tracking error variations and their causes. Institutional investors, for example, may be constrained by client mandates to limit tracking error within specific ranges and against specific benchmarks.

Index methodology drives short-term return variability.

Variations in tracking error and short-term returns, relative to benchmark indexes, are by-products of the SRI process. Some approaches for incorporating ESG criteria can eliminate or concentrate holdings in certain industries, resulting in portfolio characteristics that differ from the market.

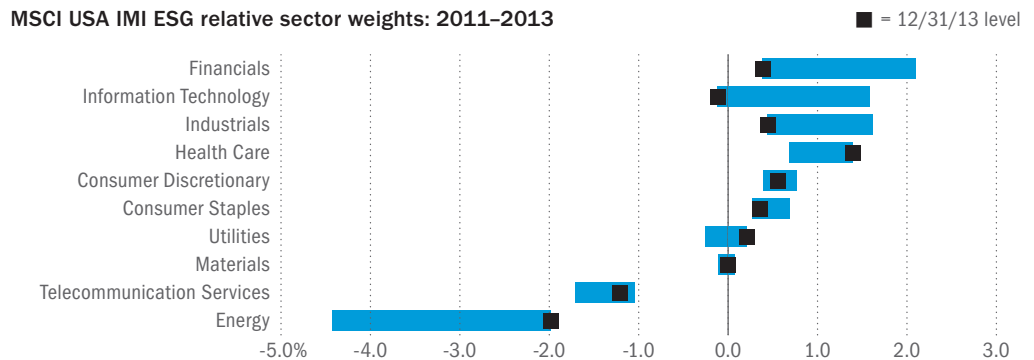
The five SRI indexes use explicit ESG criteria to select a smaller subset of stocks from a universe of eligible companies. A particular strategy can involve excluding certain industries (such as gambling, tobacco and firearms), favoring companies that are leaders among their sector peers in managing relevant ESG risks and opportunities, or a combination of both. Decisions about how stocks are rated, selected and managed differentiate SRI indexes from each other and the broad market.

The ESG evaluation and rating process itself can vary as indexes use different research approaches to select companies for inclusion in the index. Company assessments may differ depending on the ESG approach, the range of factors considered, and relative emphasis on the “E,” “S,” or “G” components. The potential impact on performance of different ESG research approaches was beyond the scope of this paper. However, an understanding of these differences may help investors select an SRI index appropriate for their needs. (See Appendix 4 for detail on ESG rating and index methodologies.) Differences in index construction determine the biases and characteristics that drive tracking error and short-term return variability, including some of the following factors:

Sector/industry weighting: Certain industries or companies may tend to be excluded or have lower ESG ratings due to the nature of their business, such as gambling, tobacco or firearms. Conversely, some industries, like technology, may tend to receive higher ratings because they may face fewer ESG challenges than other industries. These variations can impact performance and alter the investment style versus the benchmark. Omitting mining and energy companies due to environmental concerns, for example, could potentially exclude some value-oriented companies and introduce a growth style bias to an index. Heavily capitalized and highly concentrated industries often include some of the largest companies, so including or excluding them could also skew the average size of companies in the index.

As an example, Exhibit 6 shows sector over/under weights for the MSCI USA IMI ESG Index compared to MSCI’s own broad market index over a three-year period and how these levels changed over time.

Exhibit 6: Sector weight deviations can change over time



Sector weight ranges for MSCI USA IMI ESG relative to MSCI USA IMI index for period 12/31/2010 – 12/31/2013.

Sources: MSCI and TIAA-CREF

Number of holdings: In general, the more stocks in a portfolio, the lower the level of unsystematic risk. The fewer the names, the greater the odds individual companies or sector concentrations may drive returns, resulting in greater volatility. Choices about target market cap size can play a part in the number of names.

The MSCI USA IMI ESG Index broadly targets stocks of all capitalizations with higher ESG ratings, starting with a universe of over 2,400 securities. In contrast, the DJSI U.S. begins with the 600 largest-cap U.S. companies in the Dow Jones Sustainability North America Index and selects the most highly rated 20%. As a result, the MSCI index held over 1,000 mostly large- and mid-cap names as of 6/30/14, while the Dow Jones index held only 116 large-cap names. The Calvert Social Index had 698 holdings, the MSCI KLD 400 Social Index held some 400 issues, and the FTSE4Good US had 163 holdings.

Overall, we found that SRI indexes with a larger number of stocks tended to have lower tracking error. The MSCI USA IMI ESG Index and the MSCI KLD 400 Social Index had the largest number of holdings among indexes tracking the Russell 3000 and S&P 500, respectively, and the lowest tracking error. The DJSI U.S. had the fewest names and the highest tracking error.

% of stocks in the benchmark (by number and market cap): We found the greater the percentage coverage of stocks in the benchmark, the lower the index's tracking error. The number of stocks in an index versus the benchmark is a very simple measure of coverage. In this case, holdings for the five SRI indexes ranged from 23% to 80% of the number of stocks in their respective benchmarks. The two MSCI indexes had the largest coverage percentage and the lowest tracking error.

More relevant to assessing coverage and its likely impact on tracking error is the overlap of SRI index holdings with the benchmark's actual constituents. Also important is how closely the market capitalization weighting of index holdings matches the benchmark constituents. However, examining coverage at that level of detail is beyond the scope of this paper (see Appendix 5 for a sample comparison of index characteristics: MSCI USA IMI Index vs. Russell 3000 Index).

Efforts to address tracking error: SRI indexes have various procedures for adjusting position size and weights to help the index more closely and consistently track a broad market benchmark. These may include optimizing sector/industry weightings, limiting the size of individual holdings, periodic rebalancing, and using buffers and ranges to limit turnover when making constituent changes.

For example, MSCI ESG indexes specifically target sector weights to match MSCI's own underlying benchmarks. Calvert caps individual positions based on economic sector weights, but does not match a benchmark *per se*. The DJSI U.S. weights its holdings by market capitalization and relative industry weights, with individual constituents capped at 10%. The FTSE4Good US Index weights individual constituents based on their adjusted market cap, but does not adjust sector weights.

Tracking error considerations for investors

Since long-term SRI index performance is relatively indistinguishable from the broad market, tracking error may matter most to institutional investors subject to specific limits over shorter time periods. It's important to note, however, that SRI indexes with lower tracking error are more likely to provide performance more consistent with a broad market benchmark.

Investors should carefully consider specific SRI index construction, the ESG evaluation process, and the underlying market benchmark when selecting a strategy. Index methodology drives tracking error, resulting in meaningful differences among SRI indexes.

Conclusions

- SRI indexes achieved long-term performance similar to broad market benchmarks while pursuing social goals.
- Incorporating ESG criteria did not result in higher risk levels, measured by Sharpe Ratio and standard deviation. By constraining their investment universes, SRI indexes introduce tracking error and greater short-term return variability, although the magnitude depended on how the index is constructed.
- SRI indexes differed significantly in how closely they tracked broad market indexes. Understanding index methodology is critical to properly evaluating and selecting a specific index. In particular, investors should consider an index's breadth of holdings, market-cap and benchmark exposure, and steps taken to reduce tracking error and help improve consistency relative to its broad market benchmark.

Endnotes

¹ Total includes assets managed under ESG incorporation strategy alone or in combination with shareholder advocacy, but excludes assets only under shareholder advocacy strategy.

² See Appendix 1.

³ See Appendix 2 for study methodology.

⁴ The Russell 3000 and S&P 500 indexes were selected as the most appropriate proxies against which most investors might measure SRI performance. They have not necessarily been constructed for these comparisons and do not necessarily represent what would be an appropriate comparison as a parent index.

⁵ See Appendix 2.

⁶ See Appendix 3 for statistical analysis.

Appendix 1

Many studies have analyzed the performance of SRI-focused mutual funds versus their conventional counterparts and concluded the two are statistically similar. A May 2014 Empirical Research Partners publication reported there have been more than 60 separate academic studies on the subject and that 80% found no significant performance difference between SRI funds and non-SRI funds. Meanwhile, a February 2014 Northern Trust Quantitative Research white paper reported the Bloomberg index of open-end socially responsible funds based in the U.S. (BBOESRUS) earned an annual geometric total return exactly the same as the Russell 3000 index for the period January 2005 through June 2013.

There has been much less research on the performance of SRI *indexes*, the subject of our report. However, here too, research has shown the financial performance of SRI indexes has been similar to conventional benchmarks.

Below is a sampling of academic papers and institutional research on the impact of ESG investing, including some that identify additional academic resources:

General research

Empirical Research Partners, May 2014, “Stock Selection: Research and Results, May 2014: Perspectives on Socially Responsible Investing”

Kidd D., May 2014, “Sustainable Investing: Reducing Risk to Create Alpha,” *CFA Institute Investment Risk and Performance Feature Articles*, Vol. 2014, No. 1

Northern Trust, February 2014, “Doing Good and Doing Well: How Quality Can Enhance Your ESG Strategy,” *Line of Sight*

Brière M., Peillex J., and Ureche-Rangauc L., January 2014, “Do Social Responsibility Screens Really Matter? A Comparison with Conventional Sources of Performance,” *Social Science Research Network working papers series*

Gil-Bazo J., Ruiz-Verdu P., Portela A.A.P., 2010, “The performance of socially responsible mutual funds: the role of fees and management companies,” *Journal of Business Ethics*, 94(2), 243–263

Cortez M.C., Silva F., Areal N., 2009, “The performance of European socially responsible funds,” *Journal of Business Ethics*, 87(4), 573–588.

Hoepner A., McMillana D., August 2009, “Research on ‘Responsible Investment’: An Influential Literature Analysis comprising a rating, characterisation, categorisation & investigation,” *Social Science Research Network working papers series*

Mercer white paper, Nov. 2009, “Shedding Light on Responsible Investment: Approaches, returns, and impacts.”

Index-related studies

Schröder M., 2007, “Is there a difference? The performance characteristics of SRI equity indexes,” *Journal of Business Finance & Accounting*, 34(1–2), 331–348.

Statman M., 2006, “Socially responsible indexes: composition, performance and tracking error,” *Journal of Portfolio Management*, 32(3), 100–109

Sauer D.A., 1997, “The impact of social-responsibility screens on investment performance: evidence from the Domini 400 Social Index and Domini equity mutual fund,” *Review of Financial Economics*, 6(2), 137–149.

Appendix 2

Survey methodology: To measure the efficacy of SRI strategies versus the broad market, we compared risk and return measures of SRI indexes to appropriate benchmarks. We selected indexes with track records of at least 10 years. We focused on SRI equity strategies because indexes with longer-term track records are readily available and represent the bulk of SRI assets.

Our data came from FactSet Research Systems Inc., Morningstar, Inc., and MSCI Inc. and consisted of the daily, weekly, and monthly total returns (gross of fees) for five widely followed U.S. SRI indexes and the S&P 500 and Russell 3000 indexes. Returns were used to calculate mean performance, volatility, and tracking error for periods when necessary data first became available following index inception.

Performance analysis: We conducted hypothesis tests to determine whether SRI index returns were statistically similar to broad market benchmarks. The analysis showed that differences were more likely the result of random variation, rather than systematic causes. We calculated *t*-statistics to determine if there was a difference in mean returns, pairing an SRI index with either S&P 500 or Russell 3000 index as appropriate. We assumed the two samples were independent, approximately normally distributed, and drawn from a population with the same underlying variance. We also calculated an *F*-distribution to test if return variances were the same. Analysis was for the period beginning when weekly performance data was first available for each SRI index through 5/30/14. Exhibit 2A below shows the *t*- and *F*-test results: *F*-test allows us to conclude the sample pair variances were similar; *t*-test shows return pairs were statistically the same, indicating performance was comparable.

Exhibit 2A: Hypothesis tests of returns for SRI indexes and broad market benchmarks

F-Test Two-Sample for Variances										
	MSCI		DJSI U.S.		FTSE		Calvert	Russell	MSCI USA	Russell
	KLD 400	SP 500	DJSI U.S.	SP500	4Good US	SP500	Calvert	3000	IMI ESG	3000
Mean	0.213	0.207	0.118	0.125	0.181	0.196	0.095	0.119	0.153	0.156
Variance	6.216	6.053	6.664	6.660	6.268	6.005	7.351	6.788	6.954	6.738
Observations	1021	1021	804	804	595	595	735	735	687	687
Degrees of freedom	1020	1020	803	803	594	594	734	734	686	686
F stat	1.027		1.000		1.044		1.083		1.032	
P(F<=f) one-tail	0.336		0.497		0.301		0.140		0.340	
F Critical value one-tail	1.109		1.123		1.145		1.129		1.134	
If value of F stat is less than F Critical value, it can be assumed sample pairs have the same variances (i.e. are statistically similar).										
t-Test: Two-Sample Assuming Unequal Variances										
Mean	0.213	0.207	0.118	0.125	0.181	0.196	0.095	0.119	0.153	0.156
Variance	6.216	6.053	6.664	6.660	6.268	6.005	7.351	6.788	6.954	6.738
Observations	1021	1021	804	804	595	595	735	735	687	687
Pooled Variance	6.135		6.662		6.136		7.070		6.846	
Hypothesized mean diff.	0		0		0		0		0	
Degrees of freedom	2040		1606		1188		1468		1372	
t Stat	0.057		-0.055		-0.099		-0.173		-0.023	
P(T<=t) one-tail	0.477		0.478		0.460		0.432		0.491	
t Critical one-tail	1.646		1.646		1.646		1.646		1.646	
P(T<=t) two-tail	0.955		0.956		0.921		0.863		0.982	
t Critical value two-tail	1.961		1.961		1.962		1.962		1.962	
If value of t stat is less than t Critical value, it can be assumed sample pairs of returns are statistically the same.										

Index weekly total returns through 5/30/14. Beginning dates: MSCI KLD 400 Social, 11/11/1994; DJSI U.S., 1/8/1999; Calvert Social, 5/5/2000; MSCI USA IMI ESG, 4/1/2001; FTSE4Good U.S., 1/10/2003. Dates reflect first availability of weekly returns after index inception date.

Sources: FactSet, Morningstar, MSCI, and TIAA-CREF

Appendix 3

Tracking error analysis: We performed a similar analysis of tracking error rates to determine if variances were random or statistically significant. We calculated *t*-statistics on pairs of SRI indexes. We also calculated an *F*-distribution to test if variances for the tracking error rates were the same. Analysis was for the period beginning when weekly performance data was first available for both SRI indexes in each pair tested through 5/30/14. Exhibit 3A below shows the *t*- and *F*-test results. *F*-test results allow us to conclude the sample pair variances were *not* similar; *t*-test results show that pairs of tracking error rates were statistically different and not the result of randomness.

Exhibit 3A: Hypothesis testing for SRI index and broad market benchmark tracking error rates

F-Test Two-Sample for Variances								
	Calvert	MSCI USA IMI ESG	DJSI U.S.	FTSE 4Good US	DJSI U.S.	MSCI KLD 400	FTSE 4Good US	MSCI KLD 400
Mean	2.686	1.860	2.958	2.862	3.558	2.643	2.958	2.260
Variance	0.919	0.331	1.052	0.429	1.918	0.832	1.052	0.270
Observations	636	636	544	544	753	753	544	544
Degrees of freedom	635	635	543	543	752	752	543	543
F stat	2.780		2.454		2.306		3.895	
P(F<=f) one-tail	8.976E-37		4.072E-25		7.297E-30		5.051E-53	
F Critical value one-tail	1.140		1.152		1.128		1.152	

If value of *F* stat is greater than *F* Critical value, it can be assumed the variances for the sample pairs are *not* statistically the same.

t-Test: Two-Sample Assuming Unequal Variances								
	Calvert	MSCI USA IMI ESG	DJSI U.S.	FTSE 4Good US	DJSI U.S.	MSCI KLD 400	FTSE 4Good US	MSCI KLD 400
Mean	2.686	1.860	2.958	2.862	3.558	2.643	2.958	2.260
Variance	0.919	0.331	1.052	0.429	1.918	0.832	1.052	0.270
Observations	636	636	544	544	753	753	544	544
Hypothesized Mean Difference	0		0		0		0	
Degrees of freedom	1039		923		1301		805	
t Stat	18.630		1.842		15.139		14.157	
P(T<=t) one-tail	2.305E-67		3.292E-02		4.119E-48		4.315E-41	
t Critical one-tail	1.646		1.647		1.646		1.647	
P(T<=t) two-tail	4.610E-67		6.584E-02		8.239E-48		8.629E-41	
t Critical value two-tail	1.962		1.963		1.962		1.963	

If value of *t* stat is greater than *t* Critical value, it can be assumed sample pairs of tracking error rates are *not* statistically the same or the result of randomness.

Weekly index total returns through 5/30/2014. Beginning dates: DJSI U.S. vs. KLD 400 Social, 12/31/1999; Calvert vs. MSCI IMI ESG US, 3/29/2002; DJSI U.S. vs. FTSE4Good US, 1/2/2004; FTSE4Good US vs. MSCI KLD 400 Social, 1/2/2004. For each index pair, dates are 12 months after inception date of index with shortest track record. Initial TE calculations require a full year of returns data.

Sources: FactSet, Morningstar, MSCI, and TIAA-CREF

Appendix 4

Index methodology and ESG evaluation processes

The evaluation process used to assess ESG performance and identify securities for inclusion may be performed in-house or by a third party. It is important to note that there are differences in research approaches and methodologies for assessing company ESG performance. For example, sources of ESG data may come solely from publicly available, self-reported information, in-depth interviews with companies, proprietary research, or a combination of sources. The type and scope of ESG issues emphasized may vary. Companies may be assessed on the same set of criteria on an absolute basis, or on industry-specific issues and relative to peers. Familiarity with differences in ESG research approaches may be an additional dimension to help investors evaluate an SRI index.

Below is a summary of index methodology and rating processes:

Exhibit 4A: SRI index methodologies and rating processes

SRI Index	Stock selection methodology and rating process
Calvert Social Index	<ul style="list-style-type: none"> ▪ Biggest 1000 companies in Dow Jones Total Market index passing 7 ESG criteria; constituents market-cap weighted; cap on individual positions based on economic sector weights ▪ Ratings from in-house research using public information, third-party reports, advocacy organization opinion and company data through engagement with corporate management
Dow Jones Sustainability U.S. Index	<ul style="list-style-type: none"> ▪ Set percentage of companies ranked highest for sustainability (top 20%); constituents market-cap weighted; cap on individual positions ▪ Sustainability ranking generated through self-reporting by companies and third-party analysis.
FTSE4Good US Index	<ul style="list-style-type: none"> ▪ Companies from FTSE's broad market universe, meeting FTSE's ESG criteria; constituents market-cap weighted ▪ Excludes businesses involved with weapons, tobacco, gambling, alcohol, nuclear power and adult entertainment ▪ Ratings from in-house research; before 2014 from independent research by EIRIS (Experts in Responsible Investment Solutions); process overseen by independent committee of ESG experts
MSCI USA IMI ESG	<ul style="list-style-type: none"> ▪ Companies at or above ESG rating threshold, constituents market-cap weighted; sector weight targets tied to benchmark to reduce tracking error ▪ Ratings from in-house research, looking at key ESG performance indicators and extensive data to create individual company ESG ratings
MSCI KLD 400 Social Index	<ul style="list-style-type: none"> ▪ Same starting MSCI USA IMI ESG universe, but limited to 400 constituents. (200 large-cap, 200 mid-cap); market-cap weighted ▪ Excludes companies involved with alcohol, gambling, tobacco, firearms and nuclear energy, adult entertainment and genetically modified organisms.

Source: Index providers

Appendix 5

Portfolio characteristics — a closer look

Despite efforts to reduce tracking error and more closely approximate a broad market profile, SRI indexes look different than their benchmarks in other ways. A case in point is the MSCI USA IMI ESG index. Compared with the Russell 3000, this SRI index had the lowest tracking error of the five we studied yet still had only 40% of the number of benchmark holdings, an average weighted market cap 72% of the benchmark, a P/E 10% lower than the broad market measure, and price-to-sales ratio just two-thirds of the benchmark.

Exhibit 5A: Portfolio characteristics: MSCI USA IMI ESG vs. Russell 3000
(as of 6/30/14)

	MSCI USA IMI ESG	Russell 3000	% difference
Market Capitalization			
Weighted Average	74,211.6	102,579.5	72%
Median	2,535.9	1,539.4	165%
Weighted Median	33,865.4	46,714.1	72%
# of Securities	1,187	3,002	40%
Dividend Yield	1.76	1.83	96%
Price/Earnings			
Weighted Average	36.3	35.4	103%
P/E using FY1 Est			
Weighted Average	24.1	26.8	90%
Price/Cash Flow			
Weighted Average	18.6	18.2	102%
Price/Book			
Weighted Average	5.8	5.9	98%
Price/Sales			
Weighted Average	4.3	6.4	67%
ROA	7.0	6.9	101%
ROE	18.3	16.9	108%

Sources: FactSet and MSCI

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