SRI Investment & Screening Performance: An Empirical Study

Dr. Subrata Roy
Assistant Professor
Department of Commerce
Rabindra Mahavidyalaya
(Affiliated to the university of Burdwan),
Champadanga, Hooghly,
West Bengal,

Abstract

The investors generally consider different screens before going to socially responsible investment. The present study seeks to examine the performance of socially responsible investment based on some screening policies. The question here is that whether such screens (ESG) really improve investment performance. To examine this issue the study uses a simple trading strategy based on socially responsible ratings which are obtained from KLD Research & Analytics: buy stocks with higher socially responsible ratings and sell stocks with lower socially responsible ratings (similar to the strategy of market-timing: switch over to the high beta portfolio when market is up and vice versa). The study reports that the trading strategy helps to increase abnormal returns. In addition, when the investors apply the best-in-class screening policy, the abnormal return is found to be lucrative.

Keywords: SRI, Four-Factor-Model, Screening policy, Best-in-Class Approach, Trading Strategy, Long-Short Strategy

JEL Classification: G11, G12, G23, M14

Introduction

Socially responsible investment (SRI) is a much studied topic to the financial researchers. It is an investment practice that integrates environmental (E), social (S) and governance (G) factors into investment decision making process. Generally, SRI funds consider various investment screens at the time of selection or exclusion of assets based on some ecological, social, corporate governance, or ethical principles. According to the social investment forum (www.socialinvest.org), approximately ten percent of investments in US are managed based on some screening policies. Hence, the investors consider various social and environmental screens during the time of investment decision. The inclusion of such screens raises question whether those screens may help to improve investment performance or not.

The earlier studies have examined and compared the financial performances of SRI with the conventional investments (see. Luther et al., 1992, Hamilton et al., 1993, Luther and Matatko 1994, White 1995, Sauer 1997, Statman 2000, Bauer, Koedijk and Otten 2005, Bello 2005, Geczy, Stambaugh and Levin 2005, Kreander, Gray, Power and Sinclair 2005 and Barnett and Salomon 2006 etc.). Some of the previous studies have examined the SRI performances based on some screening policies and they particularly have focused on

environmental screen (See. Brammer et al., 2006, Chatterji et al. 2008 and 2009, Christmann 2000, Gerde et al., 2001 etc). The performances of those SRI funds have failed to provide significant impact on other screens. Where, socially responsible investors usually consider multi dimensional screening criterion and strategies when they go for responsible investment. This study has examined the impact of different screening approaches (positive, Negative & Best-in-Class approach) on various screened (Community, Diversity, Employee Relation etc) portfolios (High-Rated, Low-Rated & Long-Short Strategy) and also examined the impact of various screens when a particular trading strategy is applied.

Literature Review:

This section has analysed some important theoretical arguments and empirical findings about sustainable responsible investment (SRI) that helps to develop the present study.

The existing SRI literatures are cover with various contradictory theoretical arguments. Milton Friedman has argued that the most important objective of the organisation is to make profit and that's why they avoid any social initiatives that ultimately decrease shareholder values (see. New York Times 1970 cited in: Humphrey et al., 2012). However, in between 1980s and 1990s, some theories have been developed like instrumental stakeholders' theory and slack resources theory which assume a positive relationship exist between the corporate social performance and financial performance. Where, instrumental stakeholder theory assumes that firm's objective is to satisfy the various stakeholder groups that help to develop a healthy relationship between the stakeholder and the management. This initiative assists to monitor and enforce various mechanisms that ultimately create various positive effects like enhancement of firms' efficiency and financial performance (See. Freeman and Evan 1990, Hill and Jones 1992, Jones 1995 and Clarkson 1995). On the other hand, slack resource theory assumes that financial performance allows firms to become more socially responsible because it provides further resources to engage in CSR and to maintain it additional funds are required. (see. Ullmann 1985, McGuire et al., 1988, Waddock and Graves 1997). Some recent studies have examined the effects of exclusionary ethical investing on corporate behaviour (see Heinkel et al., 2001) and discussed the possible conditions by which the firms can increase their values (Mackey et al., 2007). Beside these, few existing studies have pointed out that socially responsible firms can get benefit from various mediating effects like reputational improvement, healthy relation with the financial institutions for easier access of capital, good relationship with the investors and goodwill (see. Spicer 1978, Fombrun and Shanley 1990, Davis 1973, McGuire et al., 1988, Waddock and Graves 1997). In addition, some studies have reported that SRI may lead to poorer financial performance as compared to the benchmarks or conventional investments (see. Minor 2007, Ali and Szyszka 2006 etc). In a nutshell, most of the studies have shown that a positive relationship exist between the corporate social performance and the financial performance.

The research on SRI starts in the year of 1970 and improves significantly during the recent decades. Most of the studies have examined the performance of the SRI funds only. Some studies have analysed the risk-adjusted (financial) performance of the SRI funds and compared the performance with the conventional investment funds (see. Luther et al., 1992, Hamilton et al., 1993, Luther and Matatko 1994, White 1995, Sauer 1997, Statman 2000, Bauer, Koedijk and Otten 2005, Bello 2005, Geczy, Stambaugh and Levin 2005, Kreander, Gray, Power and Sinclair 2005 and Barnett and Salomon 2006 etc.). However, those studies have a limitation that performance of the investment funds depends on the skills of the investment managers (see. Baks 2003). On the other hand, a second strand of literature has examined the SRI portfolio performance based on environmental screening policy (see. Cohen, Fenn and Konar 1997, Yamashita, Sen and Roberts 1999, Darwall, Gunster, Bauer and Koedijk 2005 etc). Today, the investors typically consider a variety of criteria and at the same time the SRI fund managers also employ several screening policies like tobacco, fire arms, alcohol, adult entertainment, community, employee relation, environment and diversity (positive and negative screens) for SRI investments. Although, the above discussion is too narrow. Diltz (1995) and Guerard (1997) overcome this drawback by examining various dimensions of socially responsible investing for the US stock market. Diltz (1995) has reported that environmental and military screens lead to significant positive performance as compared to the other screens. On the other hand, Guerard (1997) has observed that socially screened portfolios don't differ from unscreened portfolios in respect of investment performance. No doubt, numerous studies have examined the relationship between the ethical behaviour of a corporate firm and its financial performance. The first well known study on SRI performance is Moskowitz (1972). He ranks 67 selected firms in terms of their level of social responsibility and reports that highly ranked firms have higher returns than the average. Similarly, in 1978, Alexander and Bucholtz have reported that insignificant relationship exists between the social responsibility and the risk-adjusted return by using the same firms considered earlier by Moskowitz. Although, some studies have reported positive relationship exists between the CSR and financial performance (see Cochran and Wood 1984, Verschoor 1998, Herrmans, Akathaporn and Mcinnes 1993 etc). But, Moore and Robson (2002) have opined that social performance of the supermarket industry is negatively related to financial performance. However,

positive relationship may be found if lagged three years financial performance data is used. But the main problem of those studies is the lack of objectivity and inflexibility. Generally, the performance of the SRI portfolio means to measure risk and return and then compared those with the benchmark indices. There are problems with historical analysis namely the ethical criteria of different investors vary enormously due to their perception. Various approaches and benchmarks are used to measure the financial performance of SRI. Beside these, some additional factors such as skill of the managers and the time period over which the performance is measured may also influence the performance of the SRI. Few studies have considered those factors to measure the SRI performances. Among them, Mallin, Saadouni and Briston (1995) have compared the performance of ethical trusts with the non-ethical trusts based on the fund size and date of formation. This process eliminates specific characteristics that exist in the ethical portfolios like small firm effect and short survival period. They report that some funds (ethical & conventional) have outperformed the benchmark indices and majority of them have generated significant positive alphas. But both types of funds (ethical & conventional) have underperformed the benchmark indices when risk-adjusted measures have been used. In the same way, Gregory, Matatko and Luther (1997) have observed that both ethical and conventional trust funds have underperformed than the general market at the time of controlling for a size selection bias in the SRI portfolio and they have argued that SRI funds have produced lower alpha as compared to the conventional funds. Beside these, Bauer, Koedijk and Otten (2002) have applied multi-factor Carhart (1997) model to measure the performance of SRI funds. They have observed a little evidence of significant differences exist between the SRI funds and the conventional funds when risk-adjusted measures are used and also found insignificant differences between the Australian SRI funds and the conventional funds when conditional multifactor model is considered. Several authors have shown that the consideration of survivorship bias influence the average fund performance (see Brown et al., 1992). Similarly, Humphrey and Lee (2011) have observed that insignificant performance differences exist between the SRI and the conventional funds when one factor model of Jensen (1968), three factor model of Fama-French (1992) and four factor model of Carhart (1997) are used.

Objective:

More specifically the objective of the study as under:

1. To examine the impact of various SRI screening policies on different screened portfolios.
2. To observe the impact of a various screens when a trading strategy is applied.

Data:

In this study two types of data have been considered namely data on social responsibility (collected from KLD Research & Analytics, Inc. formerly known as MCSI) and financial performance (collected from Data stream). Generally, KLD applies some screening process to monitor the SRI. In 2003 the database includes all stocks from the Russell 3000 index. Here, the study has used rating data of stocks of S&P 500 and DS 400 (650 stocks) indices. In general, KLD uses both positive and negative screens at the time of evaluation. During the study period, KLD identifies seven themes namely community involvement, corporate governance, diversity, employee relations, environment, product and Human rights (see www.kld.com for detailed information about the themes and their strengths and weaknesses). The qualitative criteria are used for positive and best-in-class screening policies. Furthermore, KLD also uses exclusionary screens (negative screening policy) for companies who engage in activities like alcohol, gambling, firearms, military, nuclear power, tobacco and adult entertainment. The stock returns and accounting data have been collected from the Data Stream (namely monthly data on returns, market values, company age, R&D expenditures, net sales, book to equity, number of shares outstanding and net income). The return and accounting data have been linked with the KLD data based on ticker, name (for the oldest data) and on CUSIP code (in case of more recent data). Finally, the data on value-weighted market proxy, SMB, HML and MOM and risk free rate have been obtained from the Kenneth French's website. The study period ranges between January 2003 and December 2014.

Methodology:

Generally, KLD uses various criteria like positive and negative screens at the time of firms' performance evaluation. Positive screens indicate strengths and negative screens means concerns or weaknesses. Then the screens are sum up in various groups of corresponding items referring to a new theme. During this study period, KLD has identified seven themes namely community, Diversity, Employee Relation, Environment, Product, corporate governance and human rights. Each theme has strengths as well as weaknesses. The community theme relates to how the firm cooperates with society. Corporate governance deals with the firms' governance and direction. Diversity deals with the composition of the workforce. Employee relation indicates the relationship between the company and its employee. Environment is about environmental management and policies. Product deals with the production process and quality of the product. Finally, human rights deals with the strengths and concerns in relation to sovereignty, land, culture, labour laws and intellectual property.

To observe the impacts of various SRI screens on screened portfolios, two socially screened portfolios have been formed and then compared the performance. Before going to discussion, firstly the study has discussed the procedure of portfolio formation. It has been done by taking into consideration the KLD rating data of stocks and then the performance of such portfolios has been measured through Carhart's four-factor model (1997). Firstly, the portfolios have been constructed based on negative screens. Generally, KLD reports rating of stocks at the end of year t-1. Based on this rating, two value weighted portfolios have been made at the beginning of year t and kept unchanged these portfolios till the end of year t because the portfolios are adjusted once a year when a company disappears from the database and the stocks of that company are sold out at the available market prices and the sale proceeds are invested in the remaining stocks of the portfolios. The low-rated portfolio consists of all stocks which involves at least one controversial business activity. On the other hand, the high-rated portfolio consists of all other stocks. Then at the end of year t, we again consider the new KLD ratings because it changes throughout the year and then constructs the portfolios which are to be maintained in year t+1 finally, that gives a time series of monthly returns for the years from 2003 to 2014. The value weighted portfolios are rebalanced in each year at the beginning of the month January. The time structure remains the same when positive screens are applied. At the end of year t-1 the ratings of all the stocks are taken including environmental screen and given rank of all the stocks. Then two value weighted portfolios are made based on this ranking at the beginning of year t namely high-rated portfolio consists of top 10% of all stocks and low-rated portfolios that consists of bottom 10% of all stocks. The study also uses various cut-offs of stocks like 20%, 30%, 40% and 50%. Both types of portfolios are held till the end of year t and when new ratings are published then the portfolios are restructured and to be maintained in the year t+1. In addition, portfolios have been made based on average positive rating (positive screens) which is called combination 1. Moreover, portfolios have also been made by combining the positive and negative screens. The study excludes all stocks which are enlisted in controversial business activities (negative screening) and then compute the average positive rating of all the remaining stocks (positive screening based on combination 1) which is called combination 2. Here, the industries are not bias free. Therefore, to overcome this problem best-in-class policy has been developed by considering the positive screening criteria. The best-in-class approach has been designed by dividing the companies into ten different industry classes (Auto mobile, Engineering, Chemical, Mining, FMCG, IT etc) based on their SIC code (Standard Industrial Classification assigned by the US Govt.) that has been taken from the Kenneth R. French data library and then rank has been assigned to the stocks according to their SRI ratings within each industry class and then portfolio for every industry class has been formed based on the positive screening policy. Thereafter, another portfolio has been formed by combining the different industry portfolios and imposed weight according to the CRSP industry weights which acts as (best-in-class) industry balanced portfolio. To examine the abnormal return performance of the various screens, the whole period is divided into three equal sub periods. The duration of each sub period is consisted of four calendar years. The reason behind to select equal sub period is that to avoid possible bias in the time period and information. The study doesn't consider separately the effect of recession during the year 2008 because the crisis period has already been included during the sub period from 2007 to 2010.

The study has applied Carhart (1997) four-factor model to measure the performance of the high-rated and low-rated portfolios which controls the impacts of market risk, size effect, book-to-market effect and the momentum effect on return performance. It is assumed that socially responsible mutual funds differ from their traditional counterparts when loading factors are considered. It may be expected that different factor loadings act differently for high-rated as well as low-rated portfolios. To control such differences, the following regression has been estimated:

$$R_{sri,t} - R_{ft} = \alpha_{sri} + \beta_{sri}(R_{mt} - R_{ft}) + \lambda_{sri}SMB_t + \gamma_{sri}HML_t + \phi_{sri}MOM_t + e_{sri,t} \quad (1)$$

Where, Rsri,t is the return of the SRI portfolio at time t that acts as dependent variable, Rft is the risk free rate of return at time t (one month treasury bill rate), Rmt is the return of a value weighted market portfolio (CRSP index) at time t, SMBt is the difference between the monthly return of small and large-cap portfolio in month t, HML denotes the difference between a high and low book-to-market portfolio in month t, MOMt is the return difference between the portfolios of stocks with high and [1] low returns over the past twelve months, which captures the risk due to the momentum observed in the stock returns. αsri, βsri, λsri, γsri and ϕsri are the coefficients to be estimated and esri,t is the error term with zero mean and constant standard deviation.

Result & Discussion:

Table 1 presents the cross-sectional correlation matrix between different screens (qualitative and negative) based on ratings. It is found that the cross-sectional correlation coefficients between most of the screens are positive and in some cases are found to be negative. The negative correlation coefficients have been observed between the negative as well as the positive screens. The highest cross-sectional correlation coefficient has been found by the negative screens between the alcohol and tobacco (0.51).

Table 1 Correlation Matrix of various Screens

SRI Screens	Com.	Div.	Emp. Relat.	Env.	Prod.	Gov.	Hum. Right	Alc.	Tob.	Nuc. Power	Milit.	Fir. Arms	Gam.
Community	1.00												
Diversity	0.41	1.00											
Emp. Relatio	0.16	0.15	1.00										
Environment	0.13	0.05	0.11	1.00									
Product	-0.03	-0.03	0.19	0.33	1.00								
Governance	0.03	0.01	0.09	-0.02	0.01	1.00							
Hum. Rights	-0.03	-0.08	0.06	0.21	0.15	0.03	1.00						
Alcohol	-0.03	-0.04	0.04	-0.03	0.13	-0.03	0.07	1.00					
Tobacco	-0.07	-0.04	-0.02	0.03	0.10	0.02	0.07	0.51	1.00				
Nucl. Power	0.06	-0.03	0.09	0.12	0.11	-0.01	-0.03	-0.04	-0.04	1.00			
Military	-0.03	-0.03	0.05	0.17	0.06	0.02	0.11	-0.03	-0.02	0.07	1.00		
Firearms	0.09	0.07	0.05	0.02	0.04	0.01	0.05	0.01	0.00	-0.03	0.23	1.00	
Gambling	0.03	0.00	0.02	-0.02	0.08	0.00	0.02	-0.02	0.05	-0.01	0.00	0.01	1.00

[1]A stock with high book-to-market ratio denotes value stock and low book-to-market indicates growth stock.

The performance of portfolios (High-rated portfolio, Low-rated portfolio and Long-Short strategy) based on both screens (negative and positive) has been presented in table two. It has been observed that the market risk of three types of portfolios (High-rated portfolio, Low-rated portfolio and Long-Short strategy) has a significant impact on the excess return and the coefficients are significant in most cases. Hence, the investors can control these effects when they compare the high and low rated portfolios. Thus, the Carhart's alpha is more rational than Jensen alpha to manage these effects. Now, the performance of the portfolios made by negative screens has been examined. Here, the low-rated portfolios consist of all the stocks engage at least one controversial business activities and the high-rated portfolios consist of all other stocks. It has been observed that both types of portfolios (high-rated & low-rated) have delivered insignificant positive alphas. Here, both types of portfolios are part in the KLD universe. Therefore, the alphas of the stocks in KLD universe are positive and produce better returns than the market index (CRSP universe). In case of long-short strategy, (long in high-rated portfolios and short in low-rated portfolios) it has been found that the alpha value is negative. But MOM factor has a significant impact on the long-short strategy. In case of high-rated as well as low-rated portfolios HML has the positive effect on returns and in other cases have negative impacts. In a nutshell, it may be argued that portfolios based on negative screening policy have failed to provide abnormal returns.

Now the study has examined the performance of the portfolios made by the positive screens. The high-rated portfolios have been formed by the positive screens or combinations of screens consist of 10% of all stocks with the highest rating. It has been found that the alpha values of the long-short strategy on community, diversity, employee relation, environment and human rights screens are positive and negative for the remaining screens (product & Governance). It has also been observed that the alpha values of community, employee relation, environment, combination 1 (based on positive screens) and combination 2 (based on positive and negative screens) are statistically significant. Similarly, the alpha values of the high-rated portfolios are significant for community, Employee relation, environment, governance, human rights, combination 1 and combination 2 screens and those have provided to the investors abnormal returns. On the other hand, the alpha value of the diversity and product screens is insignificantly positive. Similarly, the alpha values of the low-rated portfolios are positively significant on employee relation, environment, product and governance screens. In the same way, the alpha value of the long short strategy based on positive screening policy for community, employee relation, environment, combination 1 and combination 2 is statistically significant. But, when the study has examined the performance of the SRI portfolios made by positive screens on different factor loadings like SMB, HML and MOM, it has been observed that a significant differences exist between the high-rated, low-rated and the long-short strategy. Ii has been found that the impact of coefficients of SMB based on positive screening policy are significantly negative on various screens for high rated and low rated portfolios (except diversity screen on low rated portfolio is negative but insignificant) as well as for the long short strategy. In case of book-to-market (HML) factor, the high-rated and low-rated portfolios have shown significant positive impact on human right screen and in other cases they are systematically different and these differences are followed by combination 1 and combination 2 respectively. The HML effect on long-short strategy based on positive screening policy is negatively significant except for human rights screen (negative not significant). Finally, the coefficients of MOM factor on high rated portfolios are negatively significant on the screens based on positive screening policy. Similarly, the MOM factor of low rated portfolios on diversity, employee relation, human rights and both combinations are also negatively significant and the MOM effects on community, diversity, environment,

product, human rights and combination (combination 1 & 2) screens are negatively significant on long-short strategy based on positive screening policy. It has been observed that the impact of various factors on portfolios (high rated, low rated & long short) based on positive screening policy, combination 2 screen has performed satisfactory than the other screens.

Table 2 Performance of Negative & Positive screening policy

SRI Screens	Alpha	Market	SMB	HML	MOM	R^2
Negative						
High-Rated	0.713	0.903*	-0.312*	0.042	-0.012	0.781
Low-Rated	1.944	1.012**	-0.154**	0.035	-0.056*	0.912
Long-Short	-0.973	0.054	-0.134	-0.012	0.045**	0.123
Community Development						
High-Rated	3.452**	0.985*	-0.451*	0.165**	-0.012*	0.812
Low-Rated	-1.595	1.123*	-0.231*	0.213	-0.010	0.792
Long-Short	5.012**	-0.213**	-0.197**	-0.266*	-0.073**	0.156
Diversity						
High-Rated	0.812	0.812*	-0.256*	0.012	-0.123**	0.891
Low-Rated	-2.123	1.230*	-0.023	0.145*	-0.045*	0.812
Long-Short	2.981	-0.156**	-0.245**	-0.123**	0.054**	0.235
Employee Relation						
High-Rated	3.781**	1.012*	-0.213*	-0.294*	-0.078**	0.794
Low-Rated	1.015**	1.056*	-0.221*	0.315**	-0.046**	0.812
Long-Short	4.123**	-0.012	0.001	-0.512*	0.012	0.512
Environment						
High-Rated	4.012**	0.821**	-0.195**	-0.215**	-0.123*	0.812
Low-Rated	0.231**	0.875*	-0.345**	0.312**	0.012	0.861
Long-Short	2.932**	0.152**	0.213**	-0.541*	-0.154*	0.512
Product						
High-Rated	0.513	1.230*	-0.012	-0.312**	-0.061**	0.912
Low-Rated	3.012**	0.745**	-0.412**	0.156*	0.001	0.832
Long-Short	-1.954	0.123	0.394**	-0.312**	-0.062**	0.512
Corporate Governance						
High-Rated	0.412**	0.712**	-0.452**	-0.501**	-0.338**	0.871
Low-Rated	0.125*	0.315**	-0.324**	0.101	0.128	0.781
Long-Short	-0.012	-0.130	0.214	-0.214**	-0.301	0.251
Human Rights						
High-Rated	2.012**	0.691**	-0.312*	0.059**	0.123**	0.845
Low-Rated	0.412	0.562**	-0.271**	0.182*	-0.056**	0.788
Long-Short	1.601	-0.112*	-0.113	-0.123	0.072**	0.215
Combination 1						
High-Rated	2.912**	0.812**	-0.213**	-0.245*	-0.152*	0.912
Low-Rated	-0.745	0.845**	-0.412**	0.312**	0.023**	0.792
Long-Short	3.945**	-0.041	0.123**	-0.289**	-0.213**	0.412
Combination 2						
High-Rated	1.978**	0.812**	-0.213**	-0.712**	-0.213**	0.878
Low-Rated	-2.15**	0.745*	-0.412*	0.213*	0.051**	0.791
Long-Short	2.546*	0.123**	0.213**	-0.512**	-0.101**	0.231

Note: Abnormal return, factor loadings and adjusted R^2 for each screen based on four -factor model. High rated portfolio based on negative screen consists of all companies excluding companies which are in controversial business activities. Low -rated portfolio based on negative screen consists of companies which are in controversial business activities. The long-short portfolio is a trading strategy going long in the high -rated and short in the low-rated portfolio. ** & * indicate 5% and 1% level.

The performance of various screens based on best-in-class screening policy has been presented in table three. It has been observed that the alpha values of community, diversity, employee relation, combination 1 and combination 2 screens based on long-short strategy are significantly positive and satisfactory as compared to the negative screening policy in terms of abnormal returns. The R2 values of various screened portfolios based on best-in-class approach are higher than the positive and negative screening policies which indicate that best-in-class approach is superior to the negative and positive screening approaches. On the other hand, the impact of various factors (SMB, HML and MOM) on different screened portfolios based on best-in-class approach is more or less same like the positive and negative screening approaches.

Table 3 Performance of Best-in-Class screening policy

SRI Screens	Alpha	Market	SMB	HML	MOM	R^2
Community Development						
High-Rated	2.312**	0.912*	-0.040**	0.151	-0.015*	0.894
Low-Rated	-1.120	1.094*	-0.205*	0.343	-0.011	0.812
Long-Short	3.009**	-0.135**	-0.001	-0.190*	-0.052**	0.103
Diversity						
High-Rated	0.612	0.645*	-0.356**	0.012	-0.145**	0.875
Low-Rated	-1.358	1.302*	-0.051**	0.178	-0.051*	0.856
Long-Short	2.807**	-0.108**	-0.521*	0.101**	0.061**	0.175
Employee Relation						
High-Rated	2.001*	1.001*	-0.112**	-0.201*	-0.067**	0.801
Low-Rated	1.001**	0.456*	0.301*	0.245	-0.034**	0.789
Long-Short	2.023**	-0.078	-0.001	-0.412*	0.013	0.201
Environment						
High-Rated	2.001**	0.742**	-0.180**	0.187*	0.154*	0.901
Low-Rated	-0.112**	0.612*	-0.201**	0.451**	-0.021	0.845
Long-Short	1.812	0.107**	0.003	-0.012*	-0.167*	0.215
Product						
High-Rated	0.412**	1.015*	-0.184	0.245**	-0.152**	0.901
Low-Rated	2.012**	0.645**	-0.312**	0.105*	0.021	0.798
Long-Short	-1.321	-0.105	0.205**	-0.001**	-0.042**	0.215
Corporate Governance						
High-Rated	0.312**	0.602**	0.395**	-0.415**	-0.412**	0.912
Low-Rated	0.215*	0.412**	-0.254**	0.233	0.205	0.812
Long-Short	-0.112**	-0.015	-0.310	-0.221**	-0.101**	0.287
Human Rights						
High-Rated	1.025**	0.502**	0.401*	0.125**	0.245**	0.801
Low-Rated	0.502	0.302**	-0.302	0.201*	0.048**	0.798
Long-Short	-0.201**	-0.118*	-0.210**	-0.004	-0.021**	0.105
Combination 1						
High-Rated	1.612**	0.654**	0.332**	0.358**	-0.251*	0.932
Low-Rated	0.005**	0.712**	-0.201	0.402**	0.002**	0.845
Long-Short	3.462**	-0.013	-0.215**	0.200**	-0.001**	0.210
Combination 2						
High-Rated	2.123**	0.602**	-0.265**	-0.633**	0.201*	0.801
Low-Rated	-2.231	0.401*	-0.512*	0.201*	-0.020**	0.745
Long-Short	4.452**	0.101**	0.001	-0.432**	-0.007**	0.187

Now the study has examined the impact of transaction cost on various screens that ranges between 0 and 200 basis points when long-short strategy is applied based on different screening policies (negative, positive and best-in-class approach). The transaction cost of the investors includes cost of forming portfolios at the beginning of the year 2003, adjustment cost of the portfolios within the period and the cost of closing the portfolios at the end of the year 2014. The study has considered round-trip transaction cost as suggested by Derwall, Gunster, Bauer and Koedijk (2005) which is ranges between 0 and 200 basis points. Here, the return of the long-short portfolio has been computed by taking into consideration the return difference between the high-rated and low-rated portfolios minus sum of transaction costs for each portfolio. The value of alpha (based on four-factor-measure) of negative, positive and best-in-class screening policies on various screens has been provided in table four. It has been observed that when the transaction cost has increased from 0 to 200 basis points then the value of alpha has decreased based on negative screening approach and this trend is followed by the positive screening policy on various screens and this fact is more alarming in case of negative, product and governance screens. However, some of the screens like Community (0 and 50 basis points), Employee relation (0, 50 and 100 bps), Environment (0), combination 1 (0, 50 and 150 bps) and combination 2 (0) have provided significant positive alpha for long-short strategy.

Similarly, the study has also examined the impact of alpha on various SRI screens at different level of transaction costs based on best-in-class approach. It has been observed from panel B that impact of alpha on product, governance and human rights is negative when transaction cost has increased from 0 to 200 basis points. But some of the SRI screens like community, diversity, employee relation, environment and both the combinations have provided positive alpha comparatively at a decrease rate and in some cases have

provided significant alphas that leads to higher returns. The alpha values based on best-in-class approach are positively significant at 0, 50, 100 and 150 basis points for community screen, 0 bps for diversity screen, 0, 50, 100 and 150 bps for employee relation screen, 0 bps for governance screen, 0 bps for human rights screen, and 0 and 50 bps for combination 1 and combination 2 screens as compared to the negative and positive screening approaches for long-short strategy. In a nutshell, it may be argued that best-in-class approach is comparatively satisfactory than negative and positive screening approaches in terms of abnormal returns at different levels of transaction costs when long short strategy is applied.

Table 4 Alphas of the long-short strategy after transaction costs

Panel A: Negative & Positive Screening

SRI Screen	0 bps	50 bps	100 bps	150 bps	200 bps
Negative	-0.973	-1.191	-1.315	-1.513	-1.837
Community	5.012**	4.392**	4.102	3.978	4.012
Diversity	2.981	2.553	2.302	2.215	1.978
Employee Relation	4.123**	4.012**	3.987**	3.742	3.156
Environment	2.932**	2.125	2.012	1.978	1.745
Product	-1.954	-1.752	-1.625	-1.325	-1.021
Governance	-0.012	-0.312	-0.215	0.012	-0.245
Human Rights	1.601	1.532	1.501	1.412	1.231
Combination 1	3.945**	3.845**	3.712	3.501**	2.156
Combination 2	2.546*	2.321	2.215	2.012	1.458

Panel B: Best-in-Class Screening

SRI Screen	0 bps	50 bps	100 bps	150 bps	200 bps
Community	3.009**	2.981**	2.781**	2.562**	1.914
Diversity	2.807**	2.562	2.302	2.712	1.945
Employee Relation	2.023**	1.987**	1.564**	1.321**	1.023
Environment	1.812	1.712	1.645	1.321	1.045
Product	-1.321	-1.398	-1.623	-1.799	-1.978
Governance	-0.112**	-0.221	-0.456	-0.612	-0.785
Human Rights	-0.201**	-0.219	-0.312	-0.378	-0.410
Combination 1	3.462**	3.125**	2.784	2.456	2.123
Combination 2	4.452**	4.398**	4.023	3.712	3.123

The performance of alpha of the long-short strategy based on positive and best-in-class approaches at various cut-off points (cut-off points based on portfolio chosen) has been presented in table five. Here, the cut-off point ranges between 5% and 50%. It has been observed from the table (Panel A) that very few SRI screens like community (5% & 10%), Diversity (10%), employee relation (5%, 10%, 20% & 30%) and Combination 1 (10%) have offered significant positive alphas based on positive screening policy for long-short strategy. Although their statistical significance has decreased with the enhancement of cut-offs consideration.

Similarly, it has also been found that best-in-class-approach has produced satisfactory alpha on several screens at various cut-offs (Panel B). Although, some of the screens (product and governance) have produced negative alphas at various cut-offs which is almost same like the positive screening policy. The radical change has been occurred in combination 1 and combination 2 in terms of significant alpha (significant at various cut-off points except 40% & 50% cut-offs for combination 2 and 50% cut-off for combination 1) as compared to the positive screening policy. Although, employee relation screen has provided satisfactory performance on long-short strategy when 30% cut-off has been considered based on the positive screening policy as compared to the best-in-class approach. Similarly, best-in-class approach has provided highest significant alpha when 50% cut-off has been considered on community screen based on best-in-class approach as compared to the positive screening policy for long-short strategy. Here, both the combination screens have provided significant alpha when 40% and 30% cut-offs have been considered based on best-in-class approach as compared to the positive screening approach. Finally, it may be argued that SRI screens have played an important role when investors have applied long-short strategy at the time of SRI investment.

Table 5 Alphas of the Long-Short Strategy for Various Cut-off

Panel A: Positive Screening

SRI Screen	5%	10%	20%	30%	40%	50%
Community	7.254**	5.453**	3.351	3.012	2.612	1.456
Diversity	4.123	4.012**	3.986	3.145	2.745	2.012
Employee Relation	6.231**	5.642**	4.542**	3.612**	3.012	2.175
Environment	4.752	4.321	3.456	2.987	2.512	1.987
Product	-5.123	-3.125	-3.987	-2.175	-2.012	-1.654
Governance	1.325	-1.456	-1.978	-2.123	-1.987	-2.012
Human Rights	4.012	3.745	3.456	2.945	2.012	1.023
Combination 1	5.123	4.457**	3.336	3.012	2.178	1.023
Combination 2	3.012	3.754	2.978	1.025	1.542	0.978

Panel B: Best-in-Class Screening

SRI Screen	5%	10%	20%	30%	40%	50%
Community	8.321*	7.546**	6.102**	4.432**	3.025**	2.487**
Diversity	6.121**	4.651**	3.125	2.689**	2.105	1.642
Employee Relation	5.123**	4.756**	4.012**	2.012	2.145	1.623
Environment	4.131	3.456	3.123**	2.987	2.012	1.455
Product	-3.102	-2.456	-2.012	-1.987	-1.645	0.975
Governance	-2.012	-2.123	-1.975	-1.465	-0.987	-0.123
Human Rights	1.023	1.456	1.109	0.945	0.833	0.502
Combination 1	7.984**	6.123**	4.541**	2.456**	1.945**	1.256
Combination 2	6.745**	5.732**	4.623**	3.886**	2.123	1.012

The study has also examined the performance of the equally-weighted portfolios based on long-short strategy on different SRI screens and screening policies and also examined the relationship with the value-weighted portfolios. It has been found from table six that the alpha value is negative for long short strategy based on negative screening policy. It has also been observed that the equally-weighted portfolios have provided positive alpha on various SRI screens when long-short strategy has been applied based on positive and best-in-class approaches. Some of the SRI screens like community, employee relation and both the combination screens have delivered significant positive alpha based on positive screening policy. Similarly, community, and both the combination screens have also provided significant alpha based on best-in-class approach. The alpha values of the long-short strategy for equally-weighted portfolios based on positive and best-in-class approaches have found to be positive that is similar to the evidence provided by the value-weighted portfolios. Finally, it may be concluded that when negative screening policy is considered for long-short strategy then the alpha value is become negative but in case of combination of screens the alpha value is found to be positive and the result is quite similar to the result provided by the value-weighted portfolios.

Table 6 Alphas of the Long-Short Strategy for Equally-weighted portfolios

SRI Screen	Negative	Positive	Best-in-Class
Negative	-1.012		
Community		7.012**	5.894*
Diversity		2.321	2.845
Employee Relation		4.127**	3.978
Environment		3.012	1.012
Product		1.945	2.014
Governance		1.045	1.626
Human Rights		0.754	0.902
Combination 1		8.156**	5.456**
Combination 2		7.456**	6.845**

Note: This table highlights for each screen the a nnualized abnormal return in terms of alpha value based on Carhart four-factor model. The portfolios are equally-weighted.

Finally, the study has examined the performance of the various SRI screens when different screening policies have been considered and their impact on different sub-periods based on long-short strategy. Here, the whole period has been divided into three equal sub-periods. It has been observed from table seven that the alpha values have been found to be negative in three sub periods for long short strategy when considered negative screening policy. Hence, it may be concluded that there is no difference in alpha performance in three sub periods based on negative

screening policy. Beside this, some of the screens have provided significant positive abnormal returns based on positive and best-in-class approaches in consecutive three sub-periods (Community, Diversity & Employee Relation). Although, the employee relation screen has failed to provide significant abnormal return based on best-in-class approach during the sub-period 2007-2010. It has also been observed that product and human rights screens have provided negative performance based on positive and best-in-class approaches in three consecutive periods. It may be said that their (Product & Human Rights) impact on SRI portfolios based on long-short strategy is same in three sub periods. In case of other screens like environment, governance and both combinations have provided positive alphas in three sub-periods based on long-short strategy. Although, it has been found that the governance screen has delivered significant positive performance based on best-in-class approach during the period 2011-2014. Similarly, combination 1 screen has also produced significant positive performance based on positive screening policy during the period 2011-2014 as compared to the other sub-periods. In addition, combination 2 has also provided significant positive performance based on best-in-class approach in three sub-periods based on long-short strategy. Therefore, it may be argued that the performances based on long-short strategy for various screening policies don't fluctuate in a rapid way in between three sub-periods. Finally, it may be concluded that the alpha performance based on long-short strategy for various screening approaches don't deviate significantly in three sub-periods.

Table 7 Alphas of the Long-Short Strategy for different sub-periods

SRI Screen	2003-2006			2007-2010			2011-2014		
	Negative	Positive	Best-in-Class	Negative	Positive	Best-in-Class	Negative	Positive	Best-in-Class
Negative	-1.456			-0.512			-1.321		
Community		4.125*	3.845**		4.546*	3.945**		4.612**	4.120*
Diversity		3.945**	4.012**		4.045**	4.321**		4.123*	4.512**
Emp. Relation		2.978**	3.012**		3.434**	3.326		3.324**	2.132**
Environment		3.012	2.316		2.945	2.413		3.013	2.452
Product		-1.012	-1.321		-1.452	-1.412		-1.469	-1.510
Governance		1.564	1.745		1.612	1.612		1.745	1.745**
Hum. Rights		-0.974	-0.845		-1.045	-0.875		-1.097	-0.642
Combination 1		0.845	0.745		0.875	0.845		0.910**	0.745
Combination 2		0.912	0.812*		1.321	0.875**		1.436	0.912**

Conclusion & Recommendation:

Today, the investors incorporate various SRI screens before going to invest. The general assumption behind it that inclusion of various SRI screens no doubt affects financial performance of the portfolios. This study has shown that whether investors can increase their performance by employing various SRI screens, different screening policies and by following a simple trading strategy. It has been observed that the performances of the SRI portfolios have found to be lucrative based on positive or best-in-class screening approaches than the negative policies. The performance of alpha based on negative screening policy on long-short strategy has found to be negative in all cases. Although, some of the screens have provided abnormal returns based on positive and best-in-class approaches when long-short strategy has been considered. However, it has been found that best-in-class approach is superior to other screening approaches regarding abnormal returns based on long-short strategy. But, in a nutshell, it may be concluded that past SRI rating is the valuable information to the investors when they go for SRI investments based on various SRI screens and Screening policies and if they consider some trading strategies. Consideration of various SRI screens (Positive screens) improves return performance. Here, is a question whether inclusion of various SRI screens improves return performance or not. The other factors have an impact on the return performance or not. Whether SRI return is predictable or SRI market is volatile is the scope of further research.

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