The Performance of Swedish Socially Responsible Mutual Funds

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Abstract

This paper evaluates the performance of Swedish socially responsible funds compared to that of conventional funds. When considering all conventional funds in the sample, the evidence shows underperformance of socially responsible funds relative to conventional funds. However, when controlling for the investment universe, size and fund age through matched-pairs analysis we find no statistical differences between the performance of socially responsible investment funds and their conventional counterparts.

The results are consistent with those of previous studies as there is evidence of a greater exposure of socially responsible funds to conventional benchmarks relative to social benchmarks. Furthermore, there is evidence that conventional funds are more exposed to small cap stocks than socially responsible funds.

Additionally, we assess the persistence of performance, through contingency tables and performance-ranked portfolios. Using risk-adjusted performance measures, we observe no evidence of performance persistence for SR funds and for conventional funds.

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1. **Introduction**

The growing number of investors who consider social and ethical criteria in their investment decisions has stimulated the development of socially responsible investments worldwide. Within this segment of the financial industry, the number of socially responsible (SR) mutual funds has increased substantially. These funds use screens to select companies that meet certain social criteria or to exclude those that are involved in undesirable activities or practices. The screens can be of a negative, positive or best-in-class type. A SR fund uses negative screens when it excludes certain companies on the basis of the type of business (e.g.: alcohol, tobacco, gambling, etc.) or practices (e.g.: use of child labor, discrimination against minorities, etc.). Positive screens are used when a SR fund selects companies that meet with best practices in terms of various dimensions of social responsibility (e. g: good relations with the employees, community relations, etc.). Finally, best-in-class screens involve the selection of companies with the best practices in each sector in terms of specific dimensions of corporate social responsibility.

The emergence of such funds and their growing dimension in the industry has attracted the interest of researchers in Finance and raised some pertinent questions, mainly related to the impact of considering social criteria in portfolio performance. At this level, there are arguments in favor of over, under and even neutral performance of socially responsible funds relative to their conventional peers.

Thus, this paper contributes to the literature by analyzing the impact of including social criteria in the performance of investment funds. This way, we intend to observe whether investors can make good investments (with good performance), by investing in socially responsible companies, and therefore contributing to a sustainable economic development.

We focus on the performance of Swedish SR funds. Historically, the origins of SR investments are usually traced back to the US, which is one of the most developed markets for SR funds. In fact, the modern era of SR investments is usually considered to have begun in the US in the 60s (Hutton, D'Antonio and Johnsen, 1998**;** Bengtsson,

2008), and the first US SR open-end fund (Pax World Fund) appeared in 1971 in the US. Nevertheless, the emergence of SR funds is not circumscribed to the US, as the first open-end SR mutual was launched in Sweden in 1965 (Bengtsson, 2008).[1] Moreover, according to Eurosif (2010), Sweden is at the forefront of socially responsible investments. The Swedish SR market has grown exponentially in recent years, and, in 2010, this market represented more than three hundred billion dollars. Also, in terms of number of mutual funds, Sweden is one of the four largest European markets (Basso and Funari, 2012). The fact that corporate responsibility issues are at the center of Scandinavian investors' concerns and that SR investing has developed from a niche to a mainstream approach to investing (Bengtsson, 2008) contributes to motivate this study. Additionally, we are not aware of studies that focus on the performance of Swedish SR funds, despite research suggesting country and cultural idiosyncratic contexts in SR investing (Bengtsson, 2008).

In this context, the purpose of this paper is threefold. The main objective is to compare the performance of Swedish SR funds with that of conventional funds. Furthermore, we aim to analyze timing and selectivity abilities of Swedish fund managers. Finally, we analyze performance persistence of Swedish SR funds.

This paper is organized into six sections. In the second section we present a brief literature review in this area. The third and fourth sections describe the methodology and the data, respectively. The empirical results are presented in the fifth section. In the last section we draw the main conclusions.

2. Literature review

The last years have witnessed an increasing interest in the performance of SR funds. This is due mostly to the increasing concerns with social responsibility practices by companies and the society as a whole. On the one hand, corporate managers are aware of the importance of meeting stakeholders' expectations (including the community), and on the other hand they feel certain that by being more active in terms of social responsibility they will be more respected by the market and their consumers.

[1] The "Aktie Ansvar Aktiefond".

There are two major lines of thought on whether companies should worry or not with the financial consequences of social responsible practices. According to the neoclassical perspective of Friedman (1962), the obligation of the manager is to maximize shareholders' value and, therefore, social responsible practices represent costs that deviates them from their goal of wealth maximization. In turn, Freeman (1984), based on stakeholder theory, argues that companies should not be concerned with shareholders only, but also with all stakeholders of the firm. Ultimately, stakeholder theory advocates that satisfying the interests of all stakeholders will contribute to increase the value to shareholders.

In terms of portfolio performance, there are also contradictory arguments on the impact of considering social screens in the financial performance of mutual funds. Following Markowitz (1952), the optimal portfolio is the one that maximizes the risk-return ratio. According to this perspective, imposing social filters to the portfolio selection process would result in a sub-optimal portfolio and, therefore, in a less attractive risk-return ratio. In contrast, another school of thought argues that socially screened portfolios may benefit from improved financial performance. This perspective is supported by some studies (e.g.: Moskowitz, 1972) that document that socially responsible companies perform better compared to those that are less responsible. This argument is supported by Kempf and Osthoff (2007), that show that even taking into account transaction costs, a strategy of buying shares of socially responsible companies and selling socially irresponsible ones results in abnormal returns up to 8,7% per year. The underlying argument is that socially responsible companies have a better quality of management, and so, are expected to perform better than their irresponsible counterparts (Waddock and Graves, 1997).

At the empirical level, there are three major areas of research to assess the performance of socially responsible investments (Cortez, Areal and Silva, 2009). The first analyzes the financial performance of companies with social concerns, comparing them to less responsible companies. A second strand of studies evaluates the performance of social indexes, and a third area of research focuses on the performance of SR fund compared to their conventional peers.

Most studies on the performance of SR mutual funds find that there are no statistical differences between their performance and that of conventional funds. For

the US market, Hamilton, Jo and Statman (1993), Goldreyer and Diltz (1999), Statman (2000) and Bello (2005) show that SR funds perform similarly to conventional funds. The conclusion is the same for the UK market, as documented by Mallin, Saadouni and Briston (1995) and Gregory, Matatko and Luther (1997). Although Luther, Matatko and Corner (1992) and Luther and Matatko (1994) observe a slight outperformance of SR funds in this market, they find that it is driven by the higher exposure of SR funds to small cap stocks. When the size factor is accounted for in the performance models, differences in performance disappear. Gregory and Whittaker (2007) analyze the performance persistence of ethical UK funds and find that neither ethical nor conventional funds underperform the market. Studies on other European markets include Scholtens (2005) on the Netherlands and Fernandez-Isquierdo and Matallin-Saez (2008) on Spain, which reach the common conclusion that the performance of SR in those markets is not statistically different from that of conventional funds. In relation to French SR funds, Le Sourd (2010) observes that these funds do not outperform the market.

There are also some papers that analyze the performance of SR funds in multiple markets, such as Kreander, Gray, Power and Sinclair (2005), Schröder (2004). Bauer, Koedijk and Otten (2005), Cortez et al. (2009), Cortez, Silva and Areal (2012). The results of these studies are consensual in finding that SR funds perform similarly to conventional funds and/or the market.

To the best of our knowledge, the only paper that includes Swedish SR funds, and even so just as a large sample of American, European and Asian funds, is Renneboog, Horst and Zhang (2008). In relation to Swedish SR funds, the authors observe that SR funds underperform their conventional counterparts.

A major issue when analyzing the SR funds is the way their performance is compared to that of conventional funds. One common way of doing so is through matched-pairs analysis. This procedure, suggested by Mallin et al. (1995), allows us to control for some fund characteristics such as size, age, style of the fund and geographic area of investment. Comparing performance without controlling for these variables might be misleading because what might be perceived as differential or similar performance might just reflect the effect of a particular characteristic that has

a specific type of effect on performance. It is therefore important to distinguish the social characteristics from other determinants of performance.

In relation to performance persistence, although it has been extensively explored in the context of conventional mutual funds, to the best of our knowledge only Gregory and Whittaker (2007) analyze the performance persistence of SR funds. By using methodologies like contingency tables and performance ranked portfolios, they find evidence that winning socially responsible funds outperform losing socially responsible funds to a greater extent that their conventional peers.

3. Methodology

The main purpose of this paper is to compare the performance of SR and conventional funds. We apply both the unconditional and the conditional versions of the single-index model and the multifactor model of Fama and French (1993). The unconditional performance model is characterized by the following expression:

$$r_{p,t} = \alpha_p + \beta_p r_{m,t} + \varepsilon_{p,t} \tag{1}$$

where $r_{p,t}$ represents the excess return of portfolio *p* over period *t*, $r_{m,t}$ is the excess return of the market during the same period, β_p is the systematic risk of portfolio *p* and $\varepsilon_{p,t}$ is the error term. In order to consider time-varying alphas and betas, we use the conditional model developed by Christopherson, Ferson and Schadt (1998):

$$r_{p,t} = \alpha_{0p} + A'_p z_{t-1} + \beta_{0p} r_{m,t} + \beta'_p (z_{t-1} r_{m,t}) + \varepsilon_{p,t} \tag{2}$$

where α_{0p} is the vector of average conditional alphas and β_{0p} is the vector of average conditional betas. As for the multifactor models, they add the value (HML) and size (SMB) factors to the single-index specification, resulting in the following expression:

$$\begin{aligned} r_{p,t} = \alpha_{0p} + A'_p z_{t-1} + \beta_{0p1} r_{m,t} + \beta'_{p1}\left(z_{t-1} r_{m,t}\right) + \beta_{0p2}(SMB) + \beta'_{p2}(z_{t-1} SMB) \\ + \beta_{0p3}(HML) + \beta'_{p3}(z_{t-1} HML) + \varepsilon_{p,t} \end{aligned} \tag{3}$$

Another goal of this paper is to investigate the timing and selectivity abilities of SR fund managers. To do so, we use an extension of the Treynor and Mazuy (1966) model. This model is obtained by adding the Fama and French (1993) factors to the Treynor and Mazuy model (1966), and is characterized by the following expression:

$$r_{p,t} = \alpha_p + \beta_{p1} r_{m,t} + \beta_{p2}(SMB) + \beta_{p3}(HML) + \beta_{p4} {r_{m,t}}^2 + \varepsilon_{p,t} \quad (4)$$

where α_p represents the ability of the managers to select the assets and β_{p4} represents the timing abilities of the fund manager.

To assess performance persistence we use two different methodologies: contingency tables and performance-ranked portfolios. Performance persistence is assessed over periods of 6, 12 and 30 months, by using excess returns, Sharpe ratios and abnormal returns (for the 30 months period) as performance measures. To construct contingency tables, in each period funds are categorized as winners or losers. A fund is a winner (loser) if its performance is higher (lower) than the median of all funds. Then, in two consecutive periods, funds are classified into four categories: winner/winner (WW), winner/loser (WL), loser/winner (LW) and loser/loser (LL). To test the null hypothesis of no performance persistence, we use the Odds Ratio Z-statistic (Brown and Goetzmann, 1995) to evaluate the significance of the cross-product ratio, and the Chi-square Test (Khan and Rudd, 1995). We also use the Yates correction for continuity, which is a correction of the Chi-square test for small samples.

Using the performance-ranked portfolios methodology, the objective is to create portfolios according to their performance in the previous period. In each period (6, 12 or 30 months), funds are sorted into quartiles, according to their performance in the previous period. Then, we calculate the average return of the four "quartile portfolios". Repeating this procedure throughout ten years, we obtain series of monthly returns for each "quartile portfolio". To assess performance persistence, we construct the "differences portfolio", which is the difference between the first and the fourth quartile excess returns. Then, we evaluate the performance of these portfolios. If the "differences portfolio" has a positive statistically significant alpha, it means that quartile 1 outperforms quartile 4, and so, there is evidence of performance persistence.

4. Data

4.1. Fund Returns

At the beginning of this study, October 2012, according to Bloomberg, there were 604 mutual funds in Sweden. We chose to study only equity funds with more than ten years, to ensure that age, recognized as a determinant mutual fund performance, will not affect the performance results. We also excluded ETF's and index funds. Our sample is composed by 119 funds, 14 of them being SR. over the period November 2002 to October 2012.

Monthly NAV's and dividends were provided by the Swedish Investment Fund Association and City-gate NAV Center. We computed the total return index series for each mutual fund, assuming that all dividends are reinvested.

In order to control for another determinant of performance, we divided the funds according to the geographic focus of investment. Table 1 presents the number of SR and conventional funds that represent the sample.

[Insert Table 1 here]

After this division, we have formed eight equally-weighted portfolios. Four of them are composed by conventional funds (one for each geographical focus of investment and one with all the conventional funds) and the other four constituted by SR funds (one for each geographical investment focus and one with all the SR funds) Table 2 presents summary statistics of all portfolios.

[Insert Table 2 here]

The eight portfolios have positive mean excess returns during the sample period. The portfolios that exhibit higher excess returns and higher volatility are the ones that invest in Swedish companies. According to the Jarque-Bera test, the null hypothesis that excess returns are normally distributed is rejected for all portfolios.

4.2. Benchmark and factor returns

Since the sample is divided into three geographical investment areas, we consider three social indexes and three conventional indexes as benchmarks. As conventional indexes we use the MSCI Index for each geographical area: MSCI World (Global funds), MSCI Europe and MSCI Sweden. As social indexes we chose the FTSE4Good Europe and FTSE4Good Global, for European and Global funds, respectively. In relation to the index for Sweden, we chose the DJSI World Sweden Subset, which includes only the Swedish companies from the DJSI World. [2]The total return indexes where collected from Thomson Reuteurs Datastream.

The size and value factors were constructed from the MSCI style indexes. For each geographical area, Small minus Big (SMB) was obtained by subtracting the returns of the MSCI Large Cap Index to the returns of the MSCI Small Cap Index and High minus Low (HML) was obtained by subtracting the returns of the MSCI Growth Index to the returns of the MSCI Value Index.

Table 3 presents the descriptive statistics of the factors (benchmarks' excess returns and the excess returns of SMB and HML portfolios).

[Insert Table 3 here]

The benchmarks for Sweden are the ones that present higher mean excess returns and higher standard deviations. Also, all factors show positive mean excess returns during the period of analysis. As for the Jarque-Bera test, for a 5% significance level, only for the factors HML Sweden and SMB Europe we do not reject the null hypothesis of normality.

As proxy for the risk-free rate, we use the STIBOR (Stockholm Interbank Offered Rate) with one-month maturity, which was obtained from the Swedish Central Bank, Sveriges Bank.

[2] This index was the only SR index of Swedish companies with a historical series of ten years.

4.3. Predetermined Public Information Variables

Four public information variables are used: the short-term rate, the term spread, the default spread and the dividend yield of a market index. These variables have been use in several studies, such as Ferson and Schadt (1996), Christopherson et al. (1998), Bauer, Ottén and Rad (2006), Bauer, Derwall and Ottén (2007), Renneboog et al. (2008) and Cortez et al. (2009). Previous studies have shown the usefulness of these variables in predicting stock and bond returns (Fama and French, 1989, and Keim and Stambaugh, 1986).

The growing integration and globalization of the financial markets motivated us to use US variables as a proxy for the state of the global economy, as in Cortez et al. (2009). The short-term rate is represented by the 3-month US Treasury Bill; the term spread is the difference between the yield of a US government bond with 10-years maturity and the yield of a 3-month US Treasury bill; and the default spread is the difference between a Moody's US AAA corporate bond yield –and a Moody's US BAA corporate bond yield.. As proxy of the market index, we use the S&P500. All time series were obtained from Thomson Reuteurs Datastream.

Following the suggestion of Ferson, Sarkissian and Simin (2003), we stochastically detrended the four series of public information variables by subtracting a 12-month moving average. This procedure is intended to avoid the problem of spurious regressions. Also, these variables are lagged one-month and used in their zero-mean values.

The ability of these variables to explain benchmark returns was tested by means of simple regressions (benchmarks' excess returns against each one of the variables individually) and multiple regressions (benchmarks' excess returns against the four variables). The unreported results of the simple regressions point out significant relations of all variables except the Default Spread with the benchmarks. The results of the multiple regressions allow us to reject the null hypothesis that the coefficients of all variables are, jointly, equal to zero.

5. Empirical Results

5.1. SR funds' exposure to socially responsible vs conventional indexes

The first step of our research was to assess if SR funds are more exposed to social or conventional indexes. One would expect that SR fund returns should be more correlated with the social indexes' returns, as both portfolios are socially screened. However, there is evidence (e.g.: Bauer et al. 2005, 2006; Cortez et al., 2009, 2012) indicating a higher exposure of this type of funds to conventional indexes relative to conventional ones. In order to examine this issue, we run two regressions for each SR fund: one with a socially responsible index as benchmark and another with a conventional index as benchmark. The results are presented in table 4.

[Insert Table 4 here]

As we can observe, all SR funds are more exposed to conventional indexes, as reflected in higher beta coefficients. Also, the adjusted-R^2 of the regressions with the conventional index as explanatory variable is higher than those obtained with the socially responsible index as the benchmark. This indicates that conventional indexes have a better explanatory power of the excess returns of SR funds'.

Nonetheless, these results alone do not guarantee that SR funds are more correlated with conventional indexes. The beta coefficient is the product of the correlation between the fund and the benchmark used and the ratio of their standard deviations. This means that the higher systematic risk estimates obtained with conventional indexes can be due either to a higher correlation between SR funds and conventional indexes, to a lower total risk of socially responsible indexes[3] or both. Theoretically, SR funds should be more correlated with socially responsible indexes, since their composition should be similar, but also the total risk of socially responsible indexes should be higher than that of conventional indexes. The magnitude of these two effects will determine the higher/minor exposure of SR funds to socially responsible/conventional indexes. To better understand how these relations work in relation to our sample of funds, we have decomposed the beta coefficients into these two factors: the correlation between the SR fund and the indexes and the

[3] This would make the ratio $\frac{\sigma_{SR}}{\sigma_{MKT}}$ higher.

ratio of the standard deviations of the SR fund and the index. The results are presented in table 5.

[Insert Table 5 here]

The results are quite puzzling, since twelve out of the fourteen SR funds analyzed are more correlated with the conventional index than with the social index. This suggests that the composition of these SR funds may not be so socially responsible after all. Another intriguing issue that suggests a similar composition of SR funds and conventional indexes is the total-risk ratio. For funds with investment focus in Sweden, total risk is almost the same as the total risk of the conventional index, which in turn is substantially inferior to the total risk of the social index. This is driven by the high total risk of the social index, which can result from a less diversification when compared to mutual funds. In the other geographical investment area this does not occur, and the ratio of the total risks is lower when we use the socially responsible index, as expected since, theoretically, the conventional index is more diversified.

These results are consistent with the DJSI Sweden benchmark, which is composed by all the firms that belong to DJSI World with headquarters on Sweden, not having a similar composition to the SR funds with this geographical investment focus, as they are far more diversified and highly correlated with conventional indexes.

5.2. SR *vs* conventional fund performance

In this section, we aim to compare the performance of SR with conventional funds. This is performed by means of two different approaches. First, we analyze performance at the aggregate level, by forming six portfolios: three SR portfolios, one for each investment area (Sweden, Europe, Global) and three conventional portfolios. Secondly, we apply the matched-pairs analysis with three matching criteria: investment focus fund size; and age of the fund. By subtracting the excess returns of a SR portfolio to a conventional portfolio, we obtain the differences in performance.

We began by creating six equally-weighted portfolios: SR Sweden, SR Europe, SR Global, Conventional Sweden, Conventional Europe and Conventional Global.

Then we used the conditional multifactor model, which is an extension of Christopherson et al. (1998), to evaluate the performance of these portfolios. Finally, for each geographic investment area, we created a time series corresponding to the differences between SR funds' excess returns and conventional funds' excess returns (Differences portfolio). Regressing these time series against the same explanatory variables gives the differences between the coefficients of the two regressions. Testing the null hypothesis that the intercept of the Differences portfolio is equal to zero will allow us to observe which type of funds perform better The results of these regressions are presented in table 6.

[Insert Table 6 here]

When comparing SR funds with all conventional funds in the sample, we observe some differences in the performance of these two types of funds. As the intercept of the Differences Portfolio, for Swedish and European funds, is negative and statistically significant at a 5% level, we can conclude that Swedish SR funds with geographic investment focus in Sweden and Europe perform worse than their conventional counterparts. In contrast, funds that invest globally perform as well as conventional funds, since the intercept is not statistically significant.

Anyhow, comparing the performance of SR funds and conventional funds without taking into account fund characteristics such as size, age and geographic investment focus might be misleading as it assumes that the only determinant of fund performance is being or not SR.[4] Thus, we used the matched-pairs analysis in order to compare differences in the performance of SR and conventional funds by controlling for some variables that have been shown to be determinants of fund returns. For the matching procedure, each SR fund was matched with a conventional fund on the basis of fund size and age.[5] Then, as before, we group SR and conventional funds into portfolios according to their geographic investment focus. Compared to the aggregate analysis performed previously, we now have Conventional portfolios with fewer funds, because only the matched pairs are included in the portfolio. Portfolio

[4] A strand of the mutual fund performance literature (e.g.: Chen, Hong, Huang and Kubik, 2004, and Ferreira, Miguel, Ramos and Keswani, 2013) has analyzed the determinants of performance and shown that fund characteristics such as size and age are among the factors that influence performance.

[5] Previous SR fund performance studies that also use these two characteristics as matching criteria include Mallin et al. (1995), Gregory et al. (1997) and Kreander et al. (2005).

performance is assessed by means of the conditional multifactor model. The results are presented in Table 7.

[Insert Table 7 here]

The differences in performance between SR and conventional funds disappear when matched-pairs analysis is used to compare performance. As we can observe in table 7, for a 5% significance level there are no differences in performance between the SR and Conventional portfolios for any of the three geographical investment areas. These results emphasize the importance of using the matched-pairs analysis when comparing SR and conventional funds. For our sample, not controlling for fund characteristics such as size and age would lead to the conclusion that SR funds perform worse than their conventional counterparts. In that case, one would not be able to distinguish performance that is attributable to fund characteristics such as size and age from that that is driven by the socially responsible attribute.

In terms of investment style, all conventional portfolios are exposed to small stocks, as well as the SR portfolio that invests in Sweden. Also, the results of the Differences portfolio shows that conventional funds invest more in small stocks than SR funds in all the three geographical investment areas (at a 5% level). These results contradict most previous studies that document that SR funds are more exposed to small capitalization stocks (e.g.: Schröder, 2004; Scholtens, 2005; Bauer et al., 2005; and Cortez et al., 2012). A possible explanation for this might be the fact that Swedish companies that are perceived as being socially responsible are big and well-known corporations. As for the value factor, none of the portfolios is exposed to value or growth stocks.

5.3. Selectivity and timing abilities

An additional goal of this study is to assess the timing and selectivity abilities of Swedish SR fund managers, and to compare them with those of conventional fund managers. We extend the Treynor and Mazuy (1966) model to a multi-factor context by including the Fama and French size (SMB) and value/growth (HML) factors in the

model. Also, we use the portfolios constructed in the previous sub-section (matched-pairs analysis). The results are presented in table 8.

[Insert Table 8 here]

First, in relation to funds that invest in Sweden, we observe that neither SR nor Conventional funds exhibit statistically significant timing and selectivity abilities. However, the results of the Differences portfolio show that, at a 5% level, conventional fund managers have higher stock selection ability than SR fund' managers. This finding is consistent with the results of Leite and Cortez (2014) relative to European funds that invest in European securities, and suggests that the fact that SR funds managers have a narrower universe of assets to choose is reflected negatively in their performance.

As for funds that invest in Europe, the SR fund shows negative selectivity abilities and both SR and Conventional funds present neutral timing abilities. Nevertheless, for funds investing in this geographic area, the SR fund performs better than Conventional funds in terms of timing abilities, since the coefficient of the quadratic term for the Differences portfolio is positive and statistically significant.

Finally, Panel C of the table shows that in relation to funds that invest globally, neither the SR nor the conventional funds present timing or selectivity abilities. Also, there are no statistical significant differences between them at this level.

5.4. Performance persistence

Performance persistence is one of the most debated themes in the mutual fund literature, as evidence on its existence contradict the Efficient Markets Hypothesis. Although this issue has been extensively explored in relation to conventional funds, to the best of our knowledge only Gregory and Whittaker (1997) investigate performance persistence of SR funds.

This section investigates performance persistence of Swedish SR and conventional funds by means of two methodologies: contingency tables and performance-ranked portfolios. Tables 9 and 10 present the results of persistence

obtained through contingency tables, for periods of 30 months, on the basis of excess returns and Fama and French (1993) alphas, respectively.

[Insert Table 9 here]

As we can see in table 9, when using excess returns as the performance measure, there is strong evidence of persistence for the period of 30 months, both for SR and conventional funds. However, without any risk-adjustment, these results only suggest the existence of persistence of excess returns. To assess the persistence of risk-adjusted performance, we analyze persistence on the basis of alphas obtained through the 3-factor model Fama and French (1993) model[6]. The results are shown in Table 10.

[Insert Table 10 here]

When we form contingency tables on the basis of Fama and French (1993) alphas, we observe no evidence of performance persistence. As we can see in table 10, there is only one period (either for SR or conventional funds) where there is evidence of this phenomenon, but in the aggregate, there is no statistical significance of the cross-product ratio and the Chi-square Test. Comparing these results with those obtained in table 9, we can conclude that what was observed then was the persistence of excess returns over/under the mean and not the persistence of risk-adjusted performance. This can be explained by the fact that more volatile funds (with high specific risk) tend to have higher excess returns in consecutive periods.[7]

The results obtained when using the performance-ranked portfolios methodology, presented in Table 11, indicate once again that performance does not persist for the different

[Insert Table 11 here]

[6] We did not use conditional alphas to assess persistence as we would only have 30 observations to estimate 19 parameters.

[7] We also assess performance persistence for shorter time periods (6 and 12 months), but only with excess returns as the performance measure. Since we only have monthly data we cannot compute alphas for these periods. Unreported results suggest the existence of strong persistence of excess returns over the mean.

The major difference between these results and those obtained with contingency tables is that in this case there is no evidence of performance persistence, even when we use excess returns as used as the criterion for ranking funds. Basically, our results imply that a strategy of buying funds that have performed better in the previous period (and holding them for the subsequent period) and selling those that performed worse does not result in abnormal returns. In other words, we cannot use past information to predict future returns, which is consistent with the Efficient Market Hypothesis.

6. Conclusions

Corporate social responsibility issues have been attracting investors' attention worldwide, with a growing number of investors seeking to invest according to their social and environmental concerns. Accompanying this trend, academics have been debating whether the inclusion of social criteria in the portfolio selection process penalizes or improves financial performance.

This paper addresses this issue for the Swedish market by comparing the performance of SR funds and conventional funds. . By doing so, we want to investigate if it is possible for investors to invest with social criteria without penalizing their financial performance. We start by analyzing the sensitivity of Swedish SR funds to social versus conventional indexes. In line with previous studies (Bauer et al., 2005, 2006; Cortez et al, 2009, 2012), our results show that Swedish SR funds are more sensitive to conventional indexes than socially screened indexes. This is a puzzling result and suggests the composition of these funds might not be so different from the composition of conventional funds after all. This is an issue that deserves further research.

When evaluating the performance of all conventional funds relative to SR funds, we observe that the former outperformed the latter. However, after controlling for some well-known determinants of performance, such as geographical investment focus, size and age, through matched-pairs analysis, the outperformance of conventional funds disappeared and no differences in the performance of the two types of funds was observed. These findings reinforce the importance of using matched-pairs analysis when comparing these two types of funds. Comparing fund

performance without taking into account characteristics that have been shown to determine fund returns can be misleading as it assumes that being SR or not is the only determinant of funds' performance. Additionally, we find evidence that conventional funds are more exposed to small cap stocks than socially responsible funds.

We also tested for timing and selectivity abilities of fund managers. The results show that some SR managers (funds with geographical investment in Sweden) perform worse in terms of stock selection abilities than their conventional counterparts whereas other SR managers (funds with geographical investment in Europe) are better market timers compared to conventional fund managers.

In terms of performance persistence, our main conclusion is that there neither SR nor conventional funds perform consistently over time when a risk-adjusted measure is used to performance. However, when we consider excess returns as measure of performance there is strong evidence of performance persistence in both type of funds. This fact might be explained by the high volatility of some funds, which leads them to have repeated returns over the median.

Overall, our results show that the performance and persistence of SR funds is comparable to that of conventional funds, suggesting that Swedish investors can consider social concerns in their investment decisions, without being penalized in terms of financial performance.

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Table 1 – Number of funds in the sample

This table presents the number of funds in the sample. We consider three geographical focus of investment for both conventional and SR funds: Sweden, Europe and Global.

Geographic Focus of Investment	SR Funds	Conventional Funds
Sweden	8	52
Europe	1	12
Global	5	40
Total	14	105

Table 2 - Summary of descriptive statistics (mutual funds)

This table presents summary statistics for the monthly excess returns of the eight equally-weighted portfolios (four composed by SR funds and four composed by conventional funds). The portfolios All SR and All Conv. contain all SR and conventional funds, respectively, in the sample. The period of analysis is from November 2002 to October 2012. Jarque-Bera (p-value) is the p-value for a statistical test, under the null hypothesis that the returns are normally distributed.

	Mean	Std. Dev.	Skewness	Kurtosis	Jarque-Bera (p-value)	Min.	Max.	Obs.
Sweden Conv.	0.0085	0.0546	-0.1373	2.7565	0.0000	-0.173	0.2284	120
Europe Conv.	0.0030	0.0446	-0.7300	1.8276	0.0000	-0.1517	0.1352	120
Global Conv.	0.0033	0.0400	-0.5929	1.6600	0.0000	-0.1221	0.1241	120
Sweden SR	0.0071	0.0557	-0.1720	2.8189	0.0000	-0.1771	0.226	120
Europe SR	0.0005	0.0428	-0.7439	1.5559	0.0000	-0.1456	0.1107	120
Global SR	0.0022	0.0391	-0.4186	1.7536	0.0001	-0.1152	0.1352	120
All SR	0.0049	0.0475	-0.3363	2.6174	0.0000	-0.1516	0.1853	120
All Conv.	0.0059	0.0465	-0.4137	2.3854	0.0000	-0.1482	0.1775	120

Table 3 - Summary of Descriptive Statistics (Benchmarks, SMB and HML)

This table presents the summary statistics for the risk factors used in this study: the six benchmarks (3 SR and 3 conventional indexes) and the HML and SMB factors for each one of the three geographical areas of investment. The period of analysis is from November 2002 to October 2012. Jarque-Bera (p-value) is the p-value for a statistical test, under the null hypothesis that the returns are normally distributed.

	Average	Std. Dev.	Skewness	Kurtosis	Jarque-Bera (p-value)	Min.	Max.	Obs.
MSCI World	0.0021	0.0351	-0.5104	1.3174	0.0010	-0.1124	0.0921	120
MSCI Sweden	0.0093	0.0606	0.0156	2.7633	0.0000	-0.1739	0.2580	120
MSCI Europe	0.0032	0.0423	-0.5702	2.2157	0.0000	-0.1448	0.1518	120
FTSE4GOOD Global	0.0015	0.0368	-0.4323	1.2292	0.0035	-0.1055	0.1105	120
FTSE4GOOD Europe	0.0027	0.0430	-0.4689	2.0290	0.0000	-0.1453	0.1559	120
DJSI Sweden	0.0100	0.0820	-0.1016	1.3958	0.0069	-0.2570	0.2810	120
HML Sweden	0.0019	0.0338	-0.0785	0.0681	0.9294	-0.0975	0.0847	120
SMB Sweden	0.0017	0.0391	-0.5617	0.1202	0.0411	-0.1010	0.0956	120
HML World	0.0008	0.0165	0.1358	1.2630	0.0154	-0.0527	0.0542	120
SMB World	0.0050	0.0236	-0.4370	1.5700	0.0003	-0.0878	0.0625	120
HML Europe	0.0006	0.0222	1.5654	7.0579	0.0000	-0.0510	0.1206	120
SMB Europe	0.0050	0.0250	-0.2895	0.3356	0.3263	-0.0750	0.0600	120

Table 4 - SR funds' exposure to socially responsible vs conventional indexes

This table presents the results of the unconditional single-index model for each SR fund. α is the performance estimate and β represents the systematic risk estimate for each fund. The conventional indexes used were the MSCI World, the MSCI Sweden and the MSCI Europe, and as social indexes the FTSE4Good Global, the FTSE4Good Europe and the DJSI Sweden. The asterisks are used to represent the statistical significance of the coefficients: 1% (***), 5% (**) and 10% (*), based on heteroskedasticity and autocorrelation consistent standard errors, following Newey and West (1987). Panel A, B and C refer to SR funds that invest in Sweden, Europe and Globally, respectively. R^2 adj. is the adjusted coefficient of determination.

Panel A						
	MSCI Sweden			DJSI Sweden		
Fund	α	β	R^2 adj.	α	β	R^2 adj.
S1	-0.0014	0.8751***	0.9212	0.0009	0.6003***	0.7948
S2	-0.0007	0.9103***	0.9407	0.0017	0.6189***	0.7970
S3	-0.0009	0.9121***	0.9287	0.0015	0.6196***	0.7855
S4	-0.0002	0.8540***	0.8197	0.0019	0.5863***	0.7081
S5	-0.0012	0.9014***	0.9321	0.0012	0.6100***	0.7826
S6	-0.0009	0.9036***	0.9355	0.0015	0.6112***	0.7846
S7	-0.0029**	0.9510***	0.9329	-0.0005	0.6527***	0.8055
S8	-0.0013	0.8027***	0.8558	0.0008	0.5444***	0.7216
Panel B						
	MSCI Europe			FTSE4GOOD Europe		
Fund	α	β	R^2 adj.	α	β	R^2 adj.
S9	-0.0026***	0.9611***	0.9018	-0.0021**	0.9367***	0.8864
Panel C						
	MSCI World			FTSE4GOOD Global		
Fund	α	β	R^2 adj.	α	β	R^2 adj.
S10	-0.0018**	0.9730***	0.8804	-0.0011	0.9187***	0.8620
S11	-0.0010	1.0439***	0.9212	-0.0002	0.9803***	0.8922
S12	-0.0022***	1.0519***	0.9047	-0.0014	0.9829***	0.8677
S13	0.0020	1.1007***	0.7650	0.0028*	1.0644***	0.7858
S14	0.0028	1.0988***	0.7566	0.0036**	1.0639***	0.7790

Table 5 - Correlations and total-risk ratios

This table presents estimates of correlations between the SR funds and the benchmarks and the total-risk ratio (SR funds' total risk divided by the total risk of the benchmark). ρ_{SR} is the correlation between SR funds and the socially responsible index, and $\rho_{Conv.}$ is the correlation between the SR fund and the conventional index. $\frac{\sigma_{Fund}}{\sigma_{SR}}$ and $\frac{\sigma_{Fund}}{\sigma_{Conv.}}$ are the ratio of the SR funds' total risk over the total-risk of the SR and conventional index, respectively. β_{SR} and β_{SR} are the systematic risk estimates, consistent with the ones presented in table 4. Panel A, B and C present SR funds that invest in Sweden, Europe and Globally, respectively.

Panel A						
Fund	ρ_{SR}	$\rho_{Conv.}$	$\frac{\sigma_{Fund}}{\sigma_{SR}}$	$\frac{\sigma_{Fund}}{\sigma_{Conv.}}$	β_{SR}	$\beta_{Conv.}$
S1	0.8915	0.9598	0.6734	0.9117	0.6003	0.8751
S2	0.8928	0.9699	0.6933	0.9386	0.6189	0.9103
S3	0.8863	0.9637	0.6991	0.9465	0.6196	0.9121
S4	0.8415	0.9054	0.6967	0.9433	0.5863	0.8540
S5	0.8847	0.9655	0.6896	0.9336	0.6100	0.9014
S6	0.8858	0.9672	0.6900	0.9342	0.6112	0.9036
S7	0.8975	0.9659	0.7273	0.9846	0.6527	0.9510
S8	0.8495	0.9251	0.6409	0.8677	0.5444	0.8027
Panel B						
Fund	ρ_{SR}	$\rho_{Conv.}$	$\frac{\sigma_{Fund}}{\sigma_{SR}}$	$\frac{\sigma_{Fund}}{\sigma_{Conv.}}$	β_{SR}	$\beta_{Conv.}$
S9	0.9420	0.9501	0.9944	1.0116	0.9367	0.9611
Panel C						
Fund	ρ_{SR}	$\rho_{Conv.}$	$\frac{\sigma_{Fund}}{\sigma_{SR}}$	$\frac{\sigma_{Fund}}{\sigma_{Conv.}}$	β_{SR}	$\beta_{Conv.}$
S10	0.9284	0.9383	0.9895	1.0370	0.9187	0.9730
S11	0.9446	0.9598	1.0378	1.0877	0.9803	1.0439
S12	0.9315	0.9512	1.0552	1.1059	0.9829	1.0519
S13	0.8864	0.8746	1.2008	1.2585	1.0644	1.1007
S14	0.8826	0.8698	1.2053	1.2633	1.0639	1.0988

Table 6 - Fund performance by geographical investment focus

This table presents the results from the conditional multifactor model, for each portfolio. For each geographical investment area, the "SR" portfolio is composed by all SR funds and the "Conventional" portfolio by all conventional funds. The "Differences" portfolio is obtained by subtracting the excess returns of the "conventional" portfolio to the "SR" portfolio. As benchmarks we use the conventional indexes MSCI Sweden, MSCI Europe and MSCI World. The asterisks are used to represent the statistical significance of the coefficients: 1% (***), 5% (**) and 10% (*), based on heteroskedasticity and autocorrelation consistent standard errors, following Newey and West (1987). Panel A, B and C refers to SR funds that invest in Sweden, Europe and Globally, respectively. R2 adj. is the adjusted coefficient of determination. N+ and N- represent, the number of funds in the portfolio with positive and negative alphas, respectively. The number of funds with statistically significant alphas, at a 5% level, is reported in brackets.

Panel A					
Portfolio	α_0	β_1 MKT	β_2 HML	β_3 SMB	R^2adj
SR	-0.0016	0.8958***	0.0629*	0.2250***	0.9599
N+	0[0]				
N-	8[1]				
Conventional	-0.0002	0.8867***	0.0184	0.3221***	0.9608
N+	16[0]				
N-	36[0]				
Differences	-0.0014**	0.0091	0.0445**	-0.0970***	0.4308
Panel B					
Portfolio	α_0	β_1 MKT	β_2 HML	β_3 SMB	R^2adj
SR	-0.0030**	1.0042***	-0.0738	0.0922*	0.9133
N+	0[0]				
N-	1[1]				
Conventional	-0.0007	1.0032***	-0.0564	0.2706***	0.9590
N+	4[0]				
N-	8[0]				
Differences	-0.0023**	0.0010	-0.0175	-0.1783***	0.3178
Panel C					
Portfolio	α_0	β_1 MKT	β_2 HML	β_3 SMB	R^2adj
SR	-0.0007	1.0360***	0.0473	0.1029	0.9105
N+	2[0]				
N-	3[2]				
Conventional	-0.0003	1.0593***	-0.1296	0.2191***	0.9071
N+	20[0]				
N-	20[2]				
Differences	-0.0004	-0.0237	0.1769***	-0.1162***	0.3405

Table 7 - Fund performance by geographical investment focus - Matched-pairs analysis

This table presents the results from the conditional multifactor model. For each geographical investment area, the "SR" portfolio is composed by all SR funds and the "Conventional" portfolio is composed by conventional funds considered as pairs, based on the size, age of the fund and geographical investment focus. The "Differences" portfolio is obtained by subtracting the excess returns of the "conventional" portfolio to the "SR" portfolio. As benchmarks we use the conventional indexes MSCI Sweden, MSCI Europe and MSCI World. The asterisks are used to represent the statistical significance of the coefficients: 1% (***), 5% (**) and 10% (*), based on heteroskedasticity and autocorrelation consistent standard errors, following Newey and West (1987). Panel A, B and C refers to SR funds that invest in Sweden, Europe and Globally, respectively. R2 adj. is the adjusted coefficient of determination. N+ and N- represent, the number of funds in the portfolio with positive and negative alphas, respectively. The number of funds with statistically significant alphas, at a 5% level, is reported in brackets.

Panel A					
Portfolio	α_0	β_1 MKT	β_2 HML	β_3 SMB	R^2adj
SR	-0.0016	0.8958***	0.0629*	0.2250***	0.9599
N+	0[0]				
N-	8[0]				
Conventional	-0.0003	0.8559***	0.0048	0.3336***	0.9549
N+	6[0]				
N-	10[0]				
Differences	-0.0013*	0.0393***	0.0588**	-0.1088***	0.5299
Panel B					
Portfolio	α_0	β_1 MKT	β_2 HML	β_3 SMB	R^2adj
SR	-0.0030**	1.0042***	-0.0738	0.0922*	0.9133
N+	0[0]				
N-	1[1]				
Conventional	-0.0025**	1.0205***	-0.0362	0.2903***	0.9274
N+	1[0]				
N-	1[0]				
Differences	-0.0005	-0.0163	-0.0376	-0.1981***	0.3537
Panel C					
Portfolio	α_0	β_1 MKT	β_2 HML	β_3 SMB	R^2adj
SR	-0.0007	1.0360***	0.0473	0.1029	0.9105
N+	2[0]				
N-	3[2]				
Conventional	-0.0009	1.0604***	-0.1998*	0.2081***	0.9077
N+	5[0]				
N-	5[0]				
Differences	0.0002	-0.0256	0.2470***	-01064**	0.2549

Table 8 - Selectivity and timing abilities

This table presents the results from the Treynor and Mazuy (1966) model, extended to a multifactor context, for each one of the portfolios. For each geographical investment area, the "SR" portfolio is composed by all SR funds and the "Conventional" portfolio is composed by conventional funds considered as pairs, based on the size, age of the fund and geographical investment focus. The "Differences" portfolio is obtained by subtracting the excess returns of the "conventional" portfolio to the "SR" portfolio. As benchmarks we use the conventional indexes MSCI Sweden, MSCI Europe and MSCI World. The asterisks are used to represent the statistical significance of the coefficients: 1% (***), 5% (**) and 10% (*), based on heteroskedasticity and autocorrelation consistent standard errors, following Newey and West (1987). Panel A, B and C refer to SR funds that invest in Sweden, Europe and Globally, respectively. R2 adj. is the adjusted coefficient of determination. N+ and N- represent, the number of funds in the portfolio with positive and negative alphas, respectively. The number of funds with statistically significant alphas, at a 5% level, is reported in brackets.

Panel A				
Portfolio	α_0	β_1 MKT	β_2 MKT^2	R^2adj.
SR	-0.0012	0.9034***	-0.1087	0.9581
N+	0[0]		1[0]	
N-	8[0]		7[0]	
Conventional	0.0005	0.8622***	-0.3311	0.9535
N+	7[0]		2[0]	
N-	9[0]		14[0]	
Differences	-0.0017**	0.0397***	0.2222*	0.5183
Panel B				
Portfolio	α_0	β_1 MKT	β_2 MKT^2	R^2adj.
SR	-0.0032**	1.0138***	0.5148	0.9133
N+	0[0]		0[0]	
N-	1[1]		1[0]	
Conventional	-0.0018	1.0163***	-0.5082	0.9263
N+	1[0]		0[0]	
N-	1[0]		2[0]	
Differences	-0.0014	-0.0023	1.0322**	0.3464
Panel C				
Portfolio	α_0	β_1 MKT	β_2 MKT^2	R^2adj.
SR	-0.0005	1.0498***	-0.5041	0.9087
N+	2[0]		2[0]	
N-	3[2]		3[0]	
Conventional	-0.0006	1.0755***	-0.4722	0.9061
N+	5[0]		5[0]	
N-	5[0]		5[2]	
Differences	0.0001	-0.0265	-0.0393	0.2245

Table 9 - Contingency table - excess returns

This table contains the contingency table results for periods of 30 months, based on excess returns. A fund is considered to be winner (loser) if it has an excess return higher (lower) than the median of all funds' excess returns. WW, WL, LW and LL represent the number of funds in each category. Column 8 presents the estimates of the cross-product ratio and column 9 the Z-test to this ratio. The tenth column shows the Chi-square Test and the Yates correction for continuity for conventional and SR funds, respectively. Figures in bold represent statistically significant values, at a 5% significance level. Panel A shows the results for SR funds and Panel B for conventional funds.

Panel A									
Periods		WW	WL	LW	LL	N	CP	Z	Yates
1	2	6	1	1	6	14	**36**	**2,346**	**4,5714**
2	3	4	3	3	4	14	1,7778	0,5327	0
3	4	6	1	1	6	14	**36**	**2,346**	**4,5714**
Agreggate		16	5	5	16	42	**10,24**	**3,2106**	**9,5238**
Panel B									
Periods		WW	WL	LW	LL	N	CP	Z	CHI
1	2	43	9	9	43	104	**22,8272**	**6,0339**	**44,4615**
2	3	32	20	20	32	104	**2,56**	**2,3319**	**5,5385**
3	4	37	15	15	37	104	**6,0844**	**4,1714**	**18,6154**
Agreggate		112	44	44	112	312	**6,4793**	**7,4264**	**59,2821**

Table 10 - Contingency table - Fama and French (1993) alphas

This table contains the contingency table results for periods of 30 months, based on alphas obtained from the Fama and French three-factor (1993) model. A fund is considered to be winner (loser) if it has an excess return higher (lower) than the median of all funds' excess returns. WW, WL, LW and LL represent the number of funds in each category. Column 8 presents the estimates of the cross-product ratio and column 9 the Z-test to this ratio. The tenth column shows the Chi-square Test and the Yates correction for continuity for conventional and SR funds, respectively. The values in bold represent statistically significant values, for a 5% significance level Panel A shows the results for SR funds and Panel B for conventional funds.

Panel A									
Periods		WW	WL	LW	LL	N	CP	Z	Yates
1	2	4	3	3	4	14	0	0	0
2	3	3	4	4	3	14	0,563	-0,533	0
3	4	5	2	1	6	14	**15**	**1,9821**	2,625
Agreggate		12	9	8	13	42	2,167	1,2281	0,85909
Panel B									
Periods		WW	WL	LW	LL	N	CP	Z	CHI
1	2	27	25	24	28	104	1,2600	0,5881	0,3846
2	3	15	36	36	17	104	**0,1968**	**-3,8209**	**15,4615**
3	4	32	19	19	34	104	**3,0139**	**2,7084**	**7,6154**
Agreggate		74	80	79	79	312	0,9250	-0,3441	0,2821

Table 11 - Performance-ranked portfolios

This table reports performance estimates (obtained from the conditional multifactor model) of the quartile portfolios, constructed following the performance-ranked portfolios methodology. These portfolios are constructed on the basis of prior performance as measure by excess returns (6, 12 and 30 months) or Fama and French (1993) alphas. Funds with the highest performance in the previous period are placed on Q1 and the ones with lowest performance in Q4. The portfolios are rebalanced every 6, 12 or 30 months, resulting in a time series of monthly returns over the period April 2003 to October 2012, November 2003 to October 2012 and April 2005 to October 2012, respectively. The portfolio Q1-Q4 is obtained by subtracting the excess returns of portfolio Q4 to those of portfolio Q1. The benchmark used is the MSCI World. The asterisks are used to represent the statistical significance of the coefficients: 1% (***), 5% (**) and 10% (*), based on heteroskedasticity and autocorrelation consistent standard errors, following Newey and West (1987). R2 adj. is the adjusted coefficient of determination. The results for SR funds are reported on Panel A and the results for conventional funds are reported on Panel B.

Panel A				
	$R_p - r_f$ 6 months	$R_p - r_f$ 12 months	$R_p - r_f$ 30 months	α FF
Q1	-0.0020	-0.0034	-0.0024	-0.0017
Q2	-0.0031**	-0.0013	0.0002	-0.0034**
Q3	-0.0030**	-0.0021*	-0.0011	-0.0009
Q4	-0.0012	-0.0021	-0.0033	-0.0014
Q1-Q4	-0.0008	-0.0014	0.0009	-0.0003
Panel B				
	$R_p - r_f$ 6 months	$R_p - r_f$ 12 months	$R_p - r_f$ 30 months	α FF
Q1	-0.0017	-0.0017	-0.0020	-0.0003
Q2	-0.0019	-0.0021*	0.0005	-0.0027*
Q3	-0.0013	-0.0008	-0.0007	-0.0011
Q4	-0.0001	-0.0020	-0.0036	-0.0017
Q1-Q4	-0.0016	0.0003	0.0015	0.0014