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On the Performance of Socially Responsible Investing: Further Evidence

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This paper's focus is on the relation between corporate social performance (CSP hereafter) and corporate financial performance (CFP hereafter). Firm's social "legitimacy" and its relation with financial performance has been the subject of many studies for the past three decades. The results of previous empirical research, while broadly conclusive of a positive relation, are not entirely consistent. On one hand, a number of studies such as Ruf and *al.* (2001), Orlitzky *et al.* (2004), Mishra and Suar (2010), Surroca *et al.* (2010) and Wang and Choi (2011) find a positive relation between corporate social performance and financial performance. On the other hand, several studies such as Vance (1975), Davidson *et al.* (1988), Bromiley and Markus (1989), Moore (2001), Brammer *et al.* (2006), Hill*et al.*, 2007 find a negative relation. Nevertheless, researchers agree on the fact that a better comprehension of this relation would be a valuable tool to both managers and shareholders in their process of decision making.

As pointed out by Griffin and Mahon (1997), the inconsistency of the results seems to be caused not only by the different measures of CSP and CFP used in prior studies but also by the differences in methods of research. Several studies such as Carter *et al.* (2000), Simpson and Kohers (2002) and Derwall *et al.* (2005) investigate this relation considering one single dimension of CSP such as environment or community involvement while other studies such as Nanda *et al.* (1996) and Waddock and Graves (1997) consider a multi-dimensional concept of CSP.

At the methodological level, a number of studies have investigated the relation between CSP and CFP by comparing the financial performance of socially mutual funds with those of conventional funds or market indexes (e.g. Hamilton and Statman, 1993; Bauer *et al.*, 2003; Bello, 2005). Although, this approach provides useful empirical evidence on the financial consequences of CSP in a practical context, it has some limitations. As suggested by Derwall *et al.* (2005), results from mutual fund studies may be, indeed, biased because of some unquantifiable aspects such as management skills and screening methods. Furthermore, studies on mutual funds do not establish whether a social premium exists because the holdings of social funds and conventional funds are not mutually exclusive. Moreover, several studies, such as Moore (2001), investigate the social-financial performance in one single industry while other studies, such as Derwall *et al.* (2005), consider firms from diverse economic sectors.

These methodological problems are notably overcome in some portfolio studies and more particularly in Derwall *et al.* (2005). Using the Innovest's ratings, Derwall *et al.* (2005) show that not only socially responsible portfolios out-perform their conventional counterparts, but also that the results tend to be industry-sensitive. In other words, the relation between CSP and CFP seems to be affected by the nature of the firm's activities as suggested by Griffin and Mahon (1999). But once again, Innovest's ratings take into consideration basically one dimension of social responsibility: the environment protection.

This paper (Shalchian, 2006) consists of a portfolio study in which we tend to overcome some of the aforementioned issues by using the multi-dimensional social ratings in Kinder, Lydenberg and Domini (KLD)[1] database and by performing our analysis through different industries. In this paper, we compare portfolios' performances with distinctive social ratings in different categories of assets. We then apply performance attribution models to test whether any performance differential between the portfolios is significant and attributable to the social component. Our study focuses on the existence of a relation between CSP and portfolio's performance. If the relation exists, we verify whether it consists of a positive relation (long-run premium) or negative (penalty) for holding socially responsible companies. Therefore, our first contribution in this paper is the fact that considering CSP as a multi-dimensional concept as suggested by Stanwick and Stanwick (1998). Moreover, Waddock and Graves (1997) suggest that investors grant different levels of importance to different dimensions of CSP. However, at this point, we suppose that investors consider and grant the same level of importance to each and all of these dimensions in their decision concerning their investments.

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Our second contribution consists of our analysis of social-financial relation through different industries. Griffin and Mahon (1999) and Derwall *et al*. (2005) suggest that industry is a particularly important factor which deserves more consideration in the studies on the relation between CSP and CFP. Therefore, in this paper we also construct "industry-sorted portfolios" in order to analyze the social-financial performance relation in different industries. We also control for the presence of style tilts (based on size, value versus growth and momentum effects) in stock portfolios, as confirmed by Fama and French (1993) and Carhart (1997). In doing so, we consider, as shown by Datta and Guthrie (1994), Robins and Wiersema (1995) and Stanwick and Stanwick (1998) that socially responsible portfolios tend to be biased toward large capitalization growth stocks. Finally, socially responsible portfolios seem to outperform unscreened portfolios in certain market states. Therefore, we perform robustness tests to determine whether our results are affected by market conditions and we verify whether certain dimensions of CSP have a more significant effect on financial performance.

Following Derwall *et al*. (2005), we construct mutually exclusive portfolios with distinctive social ratings in different categories of assets. We then apply performance attribution models to test whether any performance differential between the portfolios is significant and attributable to the social component. This method allows us to examine the long-term benefits of including social criteria in the investment process. We explicitly attempt to overcome the prior methodological problems by using several performance evaluation methods. Following Fama and French (1993) and Carhart (1997), we evaluate the portfolios' performance while controlling for multiple factors such as firm's size, profitability which are pointed out as important factors in several prior studies.

The organization of the rest of this article is as follows. The next section provides an empirical literature review on the relation between social and financial performance. The data and the methodological framework of the study are described respectively in section II. Section III is then devoted to the empirical results. Section IV concludes the paper.

■ I. Previous empirical studies

Based on the method of research, previous empirical studies on the relation between CSP and CFP can be broken down into three categories: Event studies, Regression studies on mutual funds and Portfolio studies.

In their event studies, Klassen and Mc Laughlin (1996) and Jones and Murrell (2001) suggest that firms' financial performance could be affected by social performance indicators which serve as a signal concerning the future value of the firms. Other studies such as Yamashita *et al*. (1999) don't find any significant market response to CSP.

However, McWilliams and Siegel (2001) and Harrisson and Freeman (1999) suggest that CSP sends a relatively complicated signal to the market and its effect on CFP can be poorly understood. Since event studies are based on the hypothesis of market efficiency and its ability to absorb correctly the information, this method may have some limited applications.

The second type of study, regression studies, consists of a comparison of the performances of socially responsible mutual funds and those of conventional funds. Hamilton and Statman (1993) and Bauer *et al*. (2003), amongst others, analyze the returns of ethical and conventional mutual funds and find that the difference is negligible from a statistical point of view. Further, Bello (2005) compares performances of several ethical and conventional mutual funds and finds no statistically significant difference between them. On the subject of ethical mutual funds, Derwall *et al*. (2005) suggest that ethical and conventional mutual funds are not always mutually exclusive and difference of performances could not be necessarily attributed to the social component.

The third category of studies consists of composing mutually exclusive portfolios based on various corporate social performance indicators and investigating the portfolios' return differences over some investment horizon. Several studies such as Diltz (1995), using socially screened portfolios, suggests that CSP does not improve portfolio's performance. Also, Cohen *et al*. (1997) constructed industry-sorted and environmentally screened portfolios and find that there is neither a premium nor a penalty related to CSP. Further, Aslaksen and Synnestvedt (2003) compare the risk-adjusted returns of several socially responsible and conventional portfolios and show some empirical evidence that socially screened portfolios do not systematically under-perform conventional portfolios.

A significant improvement to prior studies is brought by Derwall *et al*. (2005). Constructing mutually exclusive portfolios and using ratings data from Innovest which constitutes a commonly used measure of eco-efficiency, the authors find a significant and positive relation between CSP and CFP. In their testing, using an approach similar to that of Pastor and Stambaugh (2002), Derwall *et al*. (2005) also show that their results tend to be industry sensitive. However, inconsistency of the results can be, once again, explained by different measures of CSP in prior studies. Innovest considers basically one single dimension of CSP which is represented by firm's respect for environment protection. As shown by Stanwick and Stanwick (1998), CSP is a multi-dimensional concept and studies on the relation between CSP and financial performance should take various dimensions into consideration.

In addition, given the fact that industry is the most discussed factor in literature, it deserves a particular attention. As pointed out by Griffin and Mahon (1997), Di Bartolomeo and Kurtz (1999), Rowley and Berman (2000) and Jones and Shanken (2005), industry is an important factor and perhaps more consideration should be given to its determinative effect on the relation between CSP and CFP.

■ II. Data and methodology

To proxy for corporate social performance, we obtained rating data from KLD. Using several information sources,

both quantitative and qualitative in nature, KLD's analysts evaluate a relatively large number of American corporations in various industries. Firms are screened along multiple dimensions of corporate social performance and rated for each dimension separately. To summarize, the dimensions can be grouped into eight broad categories, which addresses eight fundamental types of corporate social responsibility: environment protection, employees' welfare, community involvement, corporate governance, diversity, human rights, product quality, and exclusionary screens.[2]

For each dimension of corporate social performance, KLD uses several criteria which are published annually. KLD rates the "strength" and "concerns" for each dimension. If the company meets the criteria for a strength or concern, it will be signified by a number 1, and otherwise a 0. Supposing that investors grant the same importance to each and all dimensions of CSP, we compute the arithmetic averages of these ratings in order to estimate the "social ratings" of each company. The total number of companies rated in KLD database used in this study is 344 in 1995 and increases to 2888 in 2006. The relatively large number of companies rated by KLD would first allow us to construct "full-sample" portfolios which are largely diversified. Second, the multi-dimensional character of KLD allows us to construct portfolios based on "External dimensions" (environment, community involvement, product quality, human right and exclusionary screens) and "Internal dimensions" (employees' welfare, corporate governance and diversity). Therefore, KLD ratings allow us to suppose that investors consider external and internal dimensions of CSP separately and grant different levels of importance to one or the other. Finally, it would allow us to divide the sample based on the firm's industry affiliation and to construct "industry sorted" portfolios in order to analyze the relation between CSP and CFP through different industries. For subdividing the sample, we used the SIC codes published by U.S. ministry of labour.

Our method consists of constructing a set of mutually exclusive, "full-sample" portfolios with distinctive social characteristics. More specifically, we consider first two equally weighted portfolios (high ranked and low ranked) denoted respectively best-in-class and worst-in-class portfolios. The best-in-class (worst-in-class) portfolio consists of companies making up the 25% rated highest (lowest) by KLD. Second, we consider a second set of portfolios based on two years holding period. Therefore, we suppose that based on KLD's social ratings, the investors change their portfolios' compositions every two years. Third, we consider best-in-class and worst-in-class portfolios measured on value-weighted basis. Finally, we consider best-in-class and worst-in-class portfolios measured on value-weighted basis with two years holding period.

Considering the fact that KLD's social ratings are available on annual basis, we suppose that the investors rebalance their portfolios once a year or once every two years based on these ratings. For full-sample portfolios with one year follow-up, we suppose that in the beginning of the year, if a company is rated among the best 25%, it will be included in the portfolio. In the beginning of the following year, if the same company is not among the best 25%, it will be excluded and replaced by another company. As for the full-sample portfolios with 2-year follow up, we suppose that this process takes place once every two years.

Once all portfolios formed, we use five alternative measures of investment performance to compare the portfolios' performances. These are Smith and Tito ratio, t_p; Sharpe information ratio, S_p; excess standard deviation adjusted return, *e*SDAR; Fama and French three-factor regression model; and Carhart four-factor regression model.

Smith and Tito ratio consists of portfolio's excess return (Jensen's alpha) adjusted for systematic risk:

$$t_p = \frac{\alpha_p}{\beta_p} \tag{1}$$

We estimate Jensen's alpha as:

$$R_{p,t} - R_{f,t} = \alpha_p + \beta_p (R_{m,t} - R_{f,t}) + \varepsilon_{p,t} \tag{2}$$

Where $R_{p,t}$ is the return on portfolio p in month t, $R_{m,t}$ is the return on the benchmark portfolio in month t, $R_{f,t}$ is the risk-free rate, and $\varepsilon_{p,t}$ is the residual term during period t. We use the Fama and French market proxy as the relevant benchmark for all portfolios. The risk-free rate is represented by the monthly return on one-month Treasury bills.

We also use the information ratio, S_p, suggested by Sharpe (1994). We estimate the information ratio as:

$$S_p = \frac{\bar{D}}{\sigma_D} \tag{3}$$

Where $\bar{D}$ is the average value of the monthly differences in return between portfolio p and the benchmark portfolio ($R_{p,t} - R_{m,t}$), and σ_D is the standard deviation of the differential return. Note that unlike the Smith and Tito ratio, the Sharpe performance measure adjusts for total risk rather than just systematic risk.

The third measure of portfolio's performance is *e*SDAR (Statman, 2000). The *e*SDAR of a portfolio represents the excess return of the portfolio over the return of the benchmark portfolio. We measure the *e*SDAR as:

$$eSDAR = R_f + \left(\frac{R_p - R_f}{\sigma_p} \right) . \sigma_m - R_m \tag{4}$$

Where R_f is the monthly return on one-month Treasury bills, R_p is the monthly return on portfolio p, R_m is the monthly return on the benchmark portfolio, σ_p is the standard deviation of portfolio p's return, and σ_m is the standard deviation of return on the benchmark portfolio.

Next, we measure portfolios' performances via Fama and French (1993) three-factor model which adds to the excess market return a "capitalization based" factor (small-cap stock returns minus large-cap stock returns, SMB) and a book-to-market factor (stock returns for companies with high "book value of equity/market capitalization" ratio minus stock returns for companies with low "book

value of equity/market capitalization" ratio, *HML*). Using these two additional control variables, we might mitigate potential biases that could result from style tilts in stock portfolios (size, value versus growth). Specifically, for all portfolios, we use a multiple least-square regression to estimate the model of the form:

$$R_{p,t} - R_{f,t} = \alpha_i + \beta_{p,1}(R_{m,t} - R_{f,t}) + \beta_{p,2}SMB_t + \beta_{p,3}HML_t + \varepsilon_{p,t} \quad (5)$$

Where $R_{p,t}$ is the return on portfolio *i* in month *t*, $R_{f,t}$ is the one-month U.S. T.Bills rate in month *t*, $R_{m,t}$ is return on a value-weighted portfolio of all NYSE, Amex and NASDAQ stocks in month *t*, *SMB* (*Small Minus Big)* is the difference between the return of a portfolio of small-cap stocks minus the return of a portfolio of large-cap stocks. The construction is done from the average return of 3 portfolios of small-cap stocks minus the average return of 3 portfolios of large-cap stocks, *HML* (*High Minus Low*) is the difference between the return of a portfolio of "value stocks" minus the return of a portfolio of "growth stocks". The construction is done from the average return of 3 portfolios of small-cap stocks minus the average return of 3 portfolios of large-cap stocks. The error term in the regression is $\varepsilon_{i,t}$.

The market proxy, the risk-free rate, and the *SMB* and *HML* factors are provided by Kenneth French Data Library. We use Fama and French market proxy as a relevant benchmark. The betas (β) coefficients are interpreted as the measure of a portfolio's risk exposure and the Jensen's alpha (α) represents the average abnormal return in excess of the return on the three-factor proxies.

The three-factor model has been subject to further improvement. Carhart (1997) demonstrates that the three-factor model fails to explain the Jegadeesh and Titman (1993) momentum strategy and proposes the addition of a one-year momentum factor (*PR1YR*) to the three-factor model. Carhart (1997) model indicates the proportion of mean return attributable to four elementary strategies: high versus low beta stocks, large versus small market capitalization stocks, value versus growth stocks, and one-year return momentum versus contrarian stocks. Therefore, we estimate performance relative to the four-factor model as:

$$R_{i,t} - R_{f,t} = \alpha_i + \beta_{i,1}(R_{m,t} - R_{f,t}) + \beta_{i,2}SMB_t + \beta_{i,3}HML_t + \beta_{i,4}PY1YR_t + \varepsilon_{i,t} \quad (6)$$

Where the first factors are the same as in the prior model and the factor *PR1YR* is constructed as the equal-weight average of firms with the highest 30 percent eleven-month returns lagged one month minus the equal-weight average of firms with the lowest 30 percent eleven-month returns lagged one month. Once again, the intercepts of these regressions would indicate the expected returns of socially responsible and conventional investment and the difference of the intercepts would be an indicator of performance differential between the two types of investment. In the next section, we describe the results of the regressions.

III. Results

III.1. THE RELATION BETWEEN SOCIAL AND FINANCIAL PERFORMANCE

Table 1 shows descriptive statistics for our socially-ranked portfolios and the market proxy for the period 1995-2006. These basic statistics suggest that, even after adjusting for volatility, best-in-class portfolios performed better than worst-in-class portfolios. The worst-in-class portfolios have a substantially lower Sharpe ratio than the best-in-class portfolios. The average return and Sharpe Ratio are respectively 19.92% and 1.42 for best-in-class, value-weighted portfolio and 17.41% and 1.16 for worst-in-class value-weighted portfolios.

We also run a test of difference between sets of portfolios with different standard deviations. The z-statistics show that the series means are not significantly different from zero.

The 5th and 6th columns of Table 1 (Skewness and Kurtosis estimates) indicate only weak deviation from a normal distribution. We also run a Jarque-Bera normal distribution test. The reported probabilities confirm that the Jarque-Bera statistic does not exceed (in absolute value) the observed value under the null hypothesis. Therefore, Jarque-Bera test also confirms that all full sample series follow the normal distribution at 1 percent significance level except for the value-weighted portfolios with one-year holding period which follow the normal distribution at 10 percent significance level.

Overall, our primary results suggest that the differences of portfolios' excess returns adjusted for total risk (standard deviation) are in favour of socially responsible portfolios. These results also suggest that there are only slight deviations of the portfolios' returns from normal distribution.

Table 2 shows the estimated measures of investment performance of the full-sample portfolios: Smith and Tito ratio; Sharpe information ratio and *eSDAR*.

We estimate Jensen's alpha and portfolios' beta in order to compute the Smith and Tito ratios using the Fama and French's market proxy. As the results show, best-in-class portfolios outperform worst-in-class in all cases during the period 1995-2006. More particularly, the results suggest that the performance measures adjusted for systematic risk (beta) as well as for total risk (standard deviation), are in favour of best-in-class portfolios. The similarity of the results from the two measures could be due to the fact that both types of portfolios containing the exact same number of assets are equally diversified. Therefore, the proportions of systematic risks are relatively high while the proportions of specific risks are relatively low for both types of portfolios. Therefore, the comparison of the performance measures whether it's based on systematic risk or on total risk remains in favour of the best-in-class portfolios.

Table 3 reports performance evaluation results obtained from the three-factor model framework (equation 5) for whole-sample portfolios. Because the primary focus of the research is the performance differential between

Table 1 : Descriptive Statistics for socially-ranked portfolios, January 1995-April 2006

The Best-in-class and the Worst-in-class portfolios represent respectively the high-ranked and the low-ranked portfolios, according to KLD social ratings. The number of firms in best-in-class and worst-in-class portfolios ranges from 86 (1995) to 722 firms (2006). EW and VW stand for equally-weighted and value-weighted portfolios, respectively. The market proxy is represented by the return on a value-weighted portfolio of all NYSE, Amex and NASDAQ stocks.

Portfolio	Mean (%)	Std.Dev (%)	Sharpe ratio	Skewness	Kurtosis	Jarque-Bera
Best-in-class portfolio (EW)	16.88	15.06	1.12	– 0.57	3.91	11.94 (0.00)
Worst-in-class portfolio (EW)	16.91	17.06	0.99	– 0.42	3.79	7.52 (0.00)
Difference test (*Z-statistics*)	0.00					
Best-in-class portfolio, EW (2-years-holding period)	16.74	15.21	1.10	– 0.58	3.74	10.77 (0.00)
Worst-in-class portfolio, EW (2-years-holding period)	16.23	17.16	0.95	– 0.51	4.11	12.84 (0.00)
Difference test (*Z-statistics*)	– 0.00					
Best-in-class portfolio (VW)	19.92	14.06	1.42	– 0.45	3.40	5.53 (0.06)
Worst-in-class portfolio (VW)	17.41	15.02	1.16	– 0.44	3.28	4.80 (0.08)
Difference test (*Z-statistics*)	0.00					
Best-in-class portfolio, VW, (2-year holding period)	16.97	15.78	1.08	– 0.34	3.09	9.80 (0.01)
Worst-in-class portfolio, VW (2-year-holding period)	15.53	15.34	1.01	– 0.52	3.82	9.90 (0.01)
Difference test (*Z-statistics*)	0.00					
Market proxy	8.73	15.37	0.57	– 0.79	3.82	17.90 (0.00)
SMB	3.35	13.56	0.25	0.39	4.36	13.95 (0.00)
HML	3.27	19.25	0.17	– 0.79	8.47	183.90 (0.00)
PY1YR	10.45	29.48	0.35	– 0.66	7.45	122.15 (0.00)

the best-in-class portfolio and the worst-in-class portfolio, we provide the returns on a *Difference* portfolio. The influence of social screening on investment performance is the difference between the alphas of the two portfolios.

According to the reported alpha estimates, the abnormal returns of best-in-class portfolios are higher than those of worst-in-class portfolios (1.33% for equally-weighted and 2.02% for value-weighted portfolios). Furthermore, a comparison of betas reveals that the portfolios did not differ significantly in exposure to the market factor. The most important observation is that the alphas of the Difference portfolios are positive for the full-sample portfolios, which suggests that the best-in-class portfolios provided higher market-adjusted returns than their worst-in-class counterparts. Although, economically large, the performance differences in this framework are not statistically significant.

Table 4 reports the performance estimates resulting from 4-factor model (equation 6). First, we notice that the best-in-class portfolios are reported to have earned a more significant average factor-adjusted annual return (6.14% and 5.17% for market-value-based portfolios) and that the difference is statistically significant respectively at the 10 and 5 percent level. This result confirms those of Moore (2001) and Khanna (2001) who suggest that size might have an effect on CSP and that larger companies are more likely to be socially responsible. By constructing the portfolios based on the market values, we grant relatively higher proportions of investments to larger companies. Therefore, it is possible that we invest relatively higher

proportions in socially responsible companies which would result in a relatively more significant difference of the abnormal returns between the two portfolios.

Second, we can state that factor loading on $R_m - R_f$, *SMB* and *HML* are generally significant. The factor loading on *HML* suggest that best-in-class portfolios were somewhat growth-stock oriented during the period examined, whereas worst-in-class portfolios were significantly tilted toward value stocks. The results of factor loading on *HML* also suggest that best-in-class portfolios were significantly tilted toward relatively profitable companies. In other words, socially responsible companies are more likely those who have experienced a long term financial success. This result would confirm those of Orlitzky and Benjamin (2001) who suggested that social-financial relation seems to be bi-directional. There are also small but statistically insignificant differences between the coefficients of SMB, in favour of worst-in-class portfolios, which could suggest again a slight orientation of best-in-class portfolios towards large companies' stocks relative to worst-in-class portfolios.

We also note the relatively weak or negative coefficient on the momentum factor for equally-weighted portfolios. They suggest that recent financial performance does not have a significant impact on the relation between CSP and CFP, which seems counterintuitive. Prior related studies revealed evidence of a positive relation between prior financial performance and subsequent social performance (e.g., Waddock and Graves, 1997; Chung *et al.*, 2003). This suggestion is confirmed by our results on the momentum factor on value-weighted portfolios. They suggest that stocks with relatively good past-year performance tend to have relatively high social rankings. Finally, the adjusted R^2s from the models have slightly increased for value-weighted portfolios. This observation confirms the incremental explanatory power of the four-factor model.

III.2. DO MARKET CONDITIONS MATTER?

We also examine the impact of bullish and bearish markets on the excess returns using subsample regressions. Table 5 reports some subsample analyses we conduct on the difference portfolios. We consider the period January 2001-December 2002 as bearish market and January 2003-December 2004 as bullish market. The results show that the gap between the performances is considerably larger during bearish market period. They also show that on a bullish market, worst-in-class portfolios could, except in case of equally-weighted portfolios, outperform the best-in-class portfolios.

This result could be particularly important. As suggested by Agle and Caldwell (1999), CSP might constitute a source of confidence for investors. The fact that socially responsible portfolios' performances are significantly higher during

Table 2 : Empirical results of the Jensen's single-factor model, Sharpe's information ratio and e.SDAR, January 1995-April 2006

Best-in-class and the worst-in-class portfolios represent respectively high-ranked and low-ranked portfolios according to KLD social ratings. The number of firms in best-in-class and worst-in-class portfolios ranges from 86 (1995) to 722 firms (2006). EW and VW stand respectively for equally-weighted and value-weighted portfolios. *T*-statistics are in parenthesis. Sample alphas are annualised percentages. The regressions use White covariance matrix estimator to calculate the standard errors and significance levels for all coefficients. Alphas (α) are annualized. t_p and S_p represent respectively Smith and Tito's ratio and Sharpe's information ratio. *eSDAR* is the excess standard-deviation-adjusted return.

Portfolio	α(%)	$R_m - R_f$	t_p	S_p	eSDAR
Best-in-class portfolio, EW	9.58*** (4.30)	0.88*** (17.65)	10.94	0.33	0.97
Worst-in-class portfolio, EW	8.88*** (3.00)	0.92*** (13.55)	9.66	0.24	0.80
Best-in-class portfolio, EW (2-years-holding period)	8.95*** (4.26)	0.89*** (18.68)	10.05	0.34	0.95
Worst-in-class portfolio, EW (2-year-holding period)	8.07*** (2.74)	0.93*** (13.65)	8.64	0.23	0.75
Best-in-class portfolio, VW	11.88*** (5.85)	0.92*** (22.82)	12.91	0.48	1.17
Worst-in-class portfolio, VW	10.48*** (4.43)	0.84*** (16.96)	12.50	0.32	1.05
Best-in-class portfolio, VW (2-year-holding period)	8.73*** (4.73)	0.94*** (26.21)	9.26	0.38	0.91
Worst-in-class portfolio, VW (2-year-holding period)	7.64*** (3.69)	0.90*** (19.94)	8.47	0.29	0.83

** Significant at the 5 percent level. *** Significant at the 1 percent level.

2001-2002 period, would suggest that socially responsible investments could appear more popular during bearish periods as the investors feel more insecure with regard to the future value of their investments. In other words, during bearish market period, investors perceiving a relatively higher level of uncertainty concerning the future value of their investments and therefore, seek a source of confidence. In this case, socially responsible investments could be perceived as safer investments relative to conventional investments. On the contrary, socially responsible investments seem to be less popular during bullish periods when investors feel relatively safe concerning their investments.

III.3. DOES INDUSTRY AFFECT THE SOCIAL-FINANCIAL RELATION?

As for the industry-sorted portfolios (Table 6), the abnormal returns of best-in-class portfolios are not significantly higher than those of worst-in-class portfolios for most industries. The largest differences in expected returns were observed in 3 industries: 9.70% in Mining industry, 5.84% in Manufacturing, 7.77% in Whole sales and Retail industry. But the results are statistically significant only in Manufacturing (at the 5 percent level), and Whole sales and retail (at the10 percent level).

This could be explained by the fact that the market may have higher expectations from some industries compared to the others with regard to the social performance. Mining and chemical companies' nature of activity has the reputation of affecting the environment more than other industries. Therefore, CSP may have a greater impact on the stock performance in this industry. The fact that results are not statistically significant in Mining and chemicals could be due to the fact that there were a relatively small number of companies rated by KLD in this industry and

Table 3. Empirical results of the Fama and French (1993) three-factor model, January 1995-April 2006

Best-in-class and the worst-in-class portfolios represent respectively high-ranked and low-ranked portfolios according to KLD social ratings. The number of firms in best-in-class and worst-in-class portfolios ranges from 86 (1995) to 722 firms (2006). EW and VW stand respectively for equally-weighted and value-weighted portfolios. *T*-statistics are in parenthesis. Sample alphas are annualised percentages. The regressions use White covariance matrix estimator to calculate the standard errors and significance levels for all coefficients. Alphas (α) are annualized.

Portfolio	α (%)	$R_m - R_f$	*SMB*	*HML*	Adjusted R^2
Best-in-class portfolio, EW	7.00*** (4.47)	0.94*** (31.14)	0.17*** (4.49)	0.33*** (10.64)	0.89
Worst-in-class portfolio, EW	5.67*** (1.29)	1.04*** (25.05)	0.16*** (2.93)	0.50*** (11.68)	0.85
Difference portfolio	1.33 (0.53)	– 0.10* (– 1.67)	0.01 (0.15)	– 0.16 (– 0.17)	0.86
Best-in-class portfolio, EW (2-years-holding period)	6.73*** (4.49)	0.96*** (28.65)	0.17*** (3.87)	0.33*** (8.89)	0.90
Worst-in-class portfolio, EW (2-year-holding period)	4.89*** (2.51)	1.05*** (21.61)	0.17** (2.23)	0.50*** (6.59)	0.85
Difference portfolio	1.84 (0.75)	– 0.09 (– 1.54)	0.00 (0.00)	– 0.17** (– 1.95)	0.87
Best-in-class portfolio, VW	11.75*** (5.92)	0.96*** (23.98)	– 0.13*** (– 2.51)	0.06 (1.16)	0.83
Worst-in-class portfolio, VW	9.73*** (4.88)	0.92*** (20.09)	– 0.17*** (– 3.16)	0.18*** (2.83)	0.80
Difference portfolio	2.02 (0.72)	0.04 (0.67)	0.05 (0.45)	– 012 (– 1.43)	0.82
Best-in-class portfolio, VW (2-year-holding period)	8.63*** (4.71)	0.98*** (28.48)	– 0.10*** (– 2.33)	0.05 (1.24)	0.85
Worst-in-class portfolio, VW (2-year-holding period)	6.80*** (4.07)	0.96*** (25.57)	– 0.15*** (-3.17)	0.19*** (3.79)	0.87
Difference portfolio	1.83 (0.74)	0.02 (-0.19)	0.05 (0.73)	– 0.14** (– 2.27)	0.86

* Significant at the10 percent level. ** Significant at the 5 percent level. *** Significant at the 1 percent level.

Table 4. Empirical results of four-factor regressions for "full sample" portfolios, January 1995-April 2006

Best-in-class and the worst-in-class portfolios represent respectively high-ranked and low-ranked portfolios according to KLD social ratings. The number of firms in best-in-class and worst-in-class portfolios ranges from 86 (1995) to 722 firms (2006). EW and VW stand respectively for equally-weighted and value-weighted portfolios. *T*-statistics are in parenthesis. The regressions use White covariance matrix estimator to calculate the standard errors and significance levels for all coefficients. Alphas (α) are annualized.

Portfolio	α (%)	$R_m - R_f$	*SMB*	*HML*	*PY1YR*	Adjusted R^2
Best-in-class (EW)	6.47***	0.95***	0.18***	0.36***	0.03	0.89
	(3.43)	(22.86)	(4.15)	(7.84)	(0.64)	
Worst-in-class (EW)	4.49*	1.07***	0.18**	0.57***	0.06	0.85
	(1.81)	(21.66)	(2.59)	(7.86)	(0.83)	
Difference portfolio	1.98	– 0.12*	0.00	– 0.21**	– 0.03	0.87
	(0.64)	(– 1.78)	(0.07)	(– 2.42)	(– 0.39)	
Best-in-class, EW (2-years-held)	6.53***	0.96***	0.17***	0.34***	0.01	0.90
	(3.60)	(24.93)	(3.98)	(7.48)	(0.23)	
Worst-in-class, EW (2-year-held)	3.56	1.08***	0.18***	0.57***	0.07	0.86
	(1.45)	(21.11)	(2.74)	(7.64)	(0.95)	
Difference portfolio	2.97	– 0.12*	– 0.01	– 0.22***	– 0.06	0.87
	(0.97)	(– 1.91)	(– 0.18)	(– 2.57)	(– 0.69)	
Best-in-class (VW)	13.57***	0.91***	– 0.16***	– 0.03	– 0.10**	0.85
	(5.94)	(17.92)	(– 3.03)	(– 0.50)	(– 2.01)	
Worst-in-class (VW)	7.43***	0.99***	– 0.14***	0.30***	0.12**	0.81
	(3.28)	(20.64)	(– 2.76)	(4.66)	(2.19)	
Difference portfolio	6.14*	– 0.08	– 0.02	– 0.33***	– 0.22***	0.83
	(1.91)	(– 1.05)	(– 0.24)	(– 3.56)	(– 2.97)	
Best-in-class, VW (2-year-holding period)	10.95***	0.91***	– 0.13***	– 0.07	– 0.12**	0.86
	(5.83)	(22.08)	(– 3.21)	(– 1.08)	(– 2.31)	
Worst-in-class,VW (2-year-holding period)	5.78***	1.01***	– 0.11***	0.24***	0.05	0.88
	(3.23)	(27.07)	(– 3.00)	(4.13)	(1.07)	
Difference portfolio	5.17**	– 0.10**	– 0.02	– 0.31***	– 0.17**	0.87
	(1.99)	(– 1.84)	(0.08)	(– 3.50)	(– 2.41)	

* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.

therefore, the portfolios that we constructed in Mining and chemicals were less diversified comparing to the others.

As for Manufacturing and Whole sales and retail, public perception often consists of companies' negligence of their employees' welfare. Therefore, it is possible that in these industries, firms' social performance constitutes a stronger signal to the market and consequently has a more significant impact on their financial performance. Once again, in Manufacturing, Whole sales and retail, the results are statistically significant. The results would confirm those of Harrisson and Freeman (1999) who suggest that industry is an important factor to be considered in a study on social-financial performance. They also confirm the results of Derwall *et al*. (2005) who suggest that the relation between CSP and CFP seems to be industry-sensitive.

III.4. DO INVESTORS GRANT MORE IMPORTANCE TO SPECIFIC DIMENSIONS OF CSP?

Waddock and Graves (1997) suggested investors grant different levels of importance to different components of CSP. Also, Brammer *et al*. (2006) suggested that CSP measures must be disaggregated and tested separately in studies on the relation between CSP and CFP. It has also been suggested that there could be a "trend" in the relation social-financial performance. In order to verify the existence of this difference, we classify the firms once based on external factors (environment, community, product, human rights and exclusionary screens) and once again based on internal factors (employees' welfare, diversity and governance) and we construct 4

Table 5. Four-factor-adjusted returns on full-period, bearish and bullish markets, January 1995-April 2006

EW represents the difference between the equally-weighted portfolios and VW represents the difference between the value-weighted portfolios. *T*-statistics are in the parenthesis. Alphas (α) are annualized.

Difference Portfolio	α (%) Full-period	α (%) Bearish market (2001-02)	α (%) Bullish market (2003-04)
EW	1.98 (0.64)	7.63 (0.94)	– 3.32 (– 1.02)
EW(2-year holding period)	2.97 (0.97)	7.73 (0.99)	– 0.50 (– 0.17)
VW	6.14* (1.91)	16.56* (1.94)	3.94* (1.66)
VW(2-year holding period)	5.17** (1.99)	13.21* (1.82)	7.14** (2.07)

** Significant at the 5 percent level.
* Significant at the 10 percent level.

sets of portfolios (best-in-class, second-in class, third-in-class and worst-in-class).

Tables 7 and 8 show the results of "factor-sorted" portfolios. The gap between the abnormal returns of best-in-class portfolios and worst-in-class portfolios is larger for external factors (14.22% vs 5.04%) comparing to those of internal factors (13.44% vs 8.70%). The results are statistically significant at 1% levels. Therefore, investors may grant a higher level of importance to the external components relative to the internal components. These results do not seem counterintuitive since external components of CSP such as environment have a more significant effect on the society in large, investors may feel more concerned by these factors. The results also suggest that there seem to be a trend in our sets of portfolios. The abnormal returns for second and third-in-class portfolios are lower than those of Best-in-class and higher than those of worst-in-class for the period of 1995-2006.

IV. Conclusion

We presented evidence that stock portfolios consisting of socially responsible companies outperformed conventional portfolios over the 1995-2006 period. We showed that best-in-class stock selection strategy historically earned a higher market risk-adjusted return than most worst-in-class portfolios. Overall, our findings, in line with those of Derwall *et al*. (2005), suggest that the benefits of considering social criteria in the investment process can be substantial.

Moreover, we analysed social-financial performance relation over an eleven-year period, considering different market tendencies during different periods. We showed that best-in-class portfolios' over-performance is considerably higher on bearish market (lower on bullish market). As pointed out by Agle and Caldwell (1999), CSP could constitute a source of confidence for investors and therefore, socially responsible investments could be more popular during bearish periods as investors feel more insecure concerning the future value of their investments.

We also presented evidence that the relation between CSP and financial performance can be affected by the nature of the firm's activities. Our results confirm once again, those of Derwall and al (2005) who suggested that the relation between CSP and CFP seems to be industry-sensitive. Our results also confirm those of Waddock and Graves (1997) and Rowley and Berman (2000) who suggest that in some industries CSP is more likely to have a more significant impact on financial performance.

In this study, we supposed that socially responsible investors select their portfolios' compositions based on KLD's average social ratings. In other words, we supposed that investors grant the same amount of importance to different dimensions of social responsibility. In reality, they may grant different degrees of importance to these dimensions based on the nature of activities. For example, Harrisson and Freeman (1999) suggest that environment seems to be the most important social criteria in Mining and chemical industry. Also, employees' welfare appears particularly to be a source of preoccupation in Whole sales and retail industry. Therefore, future research seems necessary in order to analyse the social-financial

performance relation based on different dimensions of social responsibility for different industries.

Our results also suggest that best-in-class portfolios are tilted toward large capitalization stocks. Even though this result is not statistically significant, it could confirm those of Stanwick and Stanwick (1998) and Khanna (2001) who suggested that socially responsible companies tend to be relatively large companies. Our results also suggest

Table 6. Empirical results of four-factor regressions for "industry sorted" portfolios, January 1995-April 2006

Best-in-class and the worst-in-class portfolios represent respectively high-ranked and low-ranked portfolios according to KLD social ratings in each industry. The number of firms in best-in-class and worst-in-class portfolios ranges from 86 (1995) to 722 firms (2006). *T*-statistics are in parenthesis. Sample alphas are annualised percentages. The regressions use White covariance matrix estimator to calculate the standard errors and significance levels for all coefficients. Alphas (α) are annualized.

Portfolio	α (%)	$R_m - R_f$	*SMB*	*HML*	*PY1YR*	Adjusted R^2
Mining and chemicals						
Best-in-class portfolio	4.68 (0.56)	1.14*** (6.70)	0.24 (1.06)	0.91*** (3.46)	0.51** (2.27)	0.25
Worst-in-class portfolio	– 3.92 (– 0.54)	1.22*** (10.27)	0.31* (1.78)	0.98*** (4.54)	0.27 (1.59)	0.43
Difference portfolio	9.70 (0.78)	– 0.08 (– 0.39)	– 0.07 (– 0.24)	– 0.07 (– 0.21)	0.24 (0.84)	0.33
Manufacturing						
Best-in-class portfolio	8.30*** (3.11)	0.70*** (10.23)	– 0.02 (– 0.28)	0.31*** (3.31)	0.05 (0.64)	0.61
Worst-in-class portfolio	2.46 (0.74)	0.90*** (13.15)	0.11 (1.21)	0.52*** (5.62)	0.10 (1.04)	0.65
Difference portfolio	5.84** (2.07)	– 0.20** (– 2.00)	– 0.13 (– 1.16)	– 0.21 (– 1.60)	– 0.05 (– 0.42)	0.63
Metals, machinery and electronics						
Best-in-class portfolio	6.60** (2.43)	1.13*** (18.73)	0.43*** (6.54)	0.33*** (3.95)	– 0.05 (0.76)	0.85
Worst-in-class portfolio	10.35*** (2.68)	1.23*** (16.86)	0.35*** (3.55)	0.33*** (2.84)	– 0.19*** (– 2.24)	0.79
Difference portfolio	– 3.75 (– 0.79)	– 0.10 (– 1.06)	0.08 (0.73)	0.00 (0.06)	0.14 (1.38)	0.82
Transport & communication						
Best-in-class portfolio	0.09 (0.03)	0.81*** (9.22)	0.14 (1.34)	0.71*** (6.21)	0.26** (2.55)	0.48
Worst-in-class portfolio	1.12 (0.26)	0.87*** (9.43)	– 0.03 (– 0.23)	0.76*** (6.24)	0.20* (1.80)	0.54
Difference portfolio	– 1.03 (– 0.18)	– 0.06 (– 0.51)	0.17 (1.07)	– 0.05 (– 0.27)	0.06 (0.39)	0.51
Whole sales & retail						
Best-in-class portfolio	12.02** (2.65)	0.97*** (9.47)	0.42*** (3.22)	0.42*** (3.74)	0.00 (0.00)	0.57
Worst-in-class portfolio	4.25 (1.09)	0.92*** (10.82)	0.26** (2.16)	0.52*** (4.42)	– 0.04 (-0.45)	0.60
Difference portfolio	7.77* (1.64)	0.05 (0.36)	0.16 (0.91)	– 0.10 (– 0.61)	0.04 (0.34)	0.58
Finance, insurance & real estate						
Best-in-class portfolio	5.48 (1.29)	1.11*** (10.60)	– 0.29*** (– 3.04)	0.61*** (6.05)	0.30*** (3.24)	0.64
Worst-in-class portfolio	1.45 (0.41)	1.31*** (15.23)	– 0.16* (– 1.67)	0.69*** (6.28)	0.36*** (4.73)	0.71
Difference portfolio	4.03 (0.73)	– 0.20* (– 1.92)	– 0.13 (– 1.02)	– 0.08 (– 0.52)	– 0.06 (– 0.49)	0.68

* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.

Table 7. The Four-Factor Model Results for Portfolios Based on External Factors: January 1995-April 2006

Best-in-class and worst-in-class portfolios represent respectively high and low ranked portfolios according to KLD social ratings. The number of firms in each portfolio ranges from 86 (1995) to 722 firms (2006). The regressions use White covariance matrix estimator to calculate the standard errors and significance levels for all coefficients. Alphas (α) are annualized.

Portfolio	α (%)	$R_m - R_f$	*SMB*	*HML*	*PY1YR*	Adjusted R^2
Best-in-class portfolio	14.22*** (5.62)	0.96*** (17.42)	0.01 (0.19)	0.10 (1.25)	– 0.13** (-2.20)	0.81
Second-in-class portfolio	10.44*** (3.75)	1.09*** (17.52)	0.01 (0.17)	0.09 (0.91)	0.04 (0.56)	0.79
Third-in-class portfolio	11.36*** (5.20)	1.15*** (18.57)	– 0.03 (– 0.05)	– 0.07 (– 0.74)	– 0.00 (– 0.03)	0.80
Worst-in-class portfolio	5.04*** (4.80)	1.07*** (17.22)	– 0.10 (– 1.37)	0.40** (2.71)	0.24* (1.75)	0.72

* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.

Table 8. The Four-Factor Model Results for Portfolios Based on Internal Factors: January 1995-April 2006

Best-in-class and worst-in-class portfolios represent respectively high and low ranked portfolios according to KLD social ratings. The number of firms in each portfolio ranges from 86 (1995) to 722 firms (2006). The regressions use White covariance matrix estimator to calculate the standard errors and significance levels for all coefficients. Alphas (α) are annualized.

Portfolio	α (%)	$R_m - R_f$	*SMB*	*HML*	*PY1YR*	Adjusted R^2
Best-in-class	13.44*** (5.25)	0.97*** (18.22)	– 0.20*** (-3.61)	– 0.02 (– 0.29)	– 0.04 (– 0.75)	0.80
Second-in-class portfolio	12.04*** (5.13)	1.14*** (21.10)	– 0.03 (– 0.46)	0.10 (1.14)	0.08 (1.36)	0.80
Third-in-class portfolio	11.52*** (4.32)	0.99*** (17.89)	0.13*** (2.58)	0.23*** (2.79)	0.10* (1.75)	0.78
Worst-in-class portfolio	8.70*** (5.32)	1.00*** (13.07)	– 0.64 (– 0.82)	– 0.93 (– 0.67)	– 0.30 (– 0.55)	0.76

* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.

that financially successful companies are more likely to be socially responsible. These results being statistically significant, confirm those of Waddock and Graves (1997) and Orlitzky and Benjamin (2001) who suggested that social-financial relation seems to be conditional. Consequently, future research on social-financial relation could involve cross-sectional regressions in order to analyze the impact of these factors (size and financial success) on the relation between CSP and CFP.

Future researches seem also necessary in order to analyze the social-financial performance using simultaneous equations. As pointed out by Waddock and Graves (1997), CSP could be not only an antecedent of the level of financial performance, but also a consequence of a given level of performance. Their argument is based on the fact that a good financial performance is necessary to provide the slack resources for discretionary CSP expenses. Therefore, the relation between CSP and CFP

could be simultaneous and further researches should focus on the nature of this relation.

Further, we note that our choices of portfolios (25% best versus 25% worst) implicates that we compared the performances of most socially responsible companies with those of most socially irresponsible ones (worst-in-class portfolios include also companies with negative social ranks). As a result, the differences of expected returns between the two sets of portfolios could be caused not only by the premium generated by social performance but also by the anticipated penalty due to the social irresponsibility. Therefore, future research may be necessary to determine whether the differences of expected returns can be attributed to the CSP premium or to the perceived penalty of social irresponsibility.

We also note that in this study, the primary comparison of financial performance was the intercept (alpha) of the regressions. Waddock and Graves (1997a, b), in their "good management theory" argued that better relations between a company and its stakeholders may result in a better long-term financial performance. In other words, the excess returns of the portfolios could be affected by "good management". Therefore, further studies seem necessary to examine the possible effect of "quality management" on the alphas in these regressions.

In addition, we examined the relation between CSP and CFP in a market-based framework using stock portfolios' returns as the financial performance indicator. In other words, our study was conducted from "investor's perspective". Several studies such as Carter *et al.* (2000) and Simpson and Kohers (2002) suggest that CSP could affect operating performance indicators such as the Return On Assets (ROA) and the Return On sales (ROS). Therefore, further research seems necessary to examine the relation between CSP and CFP from a "firm's perspective". Since it has also been suggested by Waddock and Graves (1997) and Orlitzky and Benjamin (2001) that the relation between CSP and CFP might be simultaneous, further research should also take into account an eventual simultaneity or the bi-directional aspect of the relation between CSP and operating performance.

Finally, the period covered by our study does not include the subprime turmoil. Indeed, this financial crisis brought to light the costs of unethical behavior and showed that SRI are more resilient to such a shock (Miwa et al. 2011). It would be, therefore, worthwhile to extend this current research through examining the possible effect of the crisis on the relation between CSP and CFP.

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1 See www.kld.com.

2 The Domini social fund proceeds to a "negative screening" for all companies involved in production of tobacco, alcohol, gambling and firearms.

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