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Does Social Screening Impact Portfolio Performance? The Specific Case of the U.S. Market

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Abstract

Recent literature points out that investors are more aware of social issues, what drives them to apply socially responsible screens when making investments' decisions. Therefore, the main goal of this study is to evaluate the financial performance of investments with high social responsible ratings relative to low-rated investments. To test our hypotheses, we collect data from Asset4, namely (social) ratings targeting a sample of U.S. companies and formed portfolios according to different social sub-indicators, which include human rights, diversity, health, and safety. Our sample covers the 2003-2016 period. We use unconditional and conditional models to evaluate performance, conditioning our models to the economic cycle. Our results suggest that the difference between the high- and low-rated portfolios' returns is not significant, i.e., our evidence supports the "no effect" hypothesis. Furthermore, we extend our analysis across industries and observe that the Retail Sector generates higher returns in the case of high-rated portfolios and in the case of the long-short strategy (high-rated minus low-rated portfolios).

Keywords: Socially Responsible Investing; Performance; Portfolio Management

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Introduction

Socially Responsible Investing (SRI) is defined as "an investment process that considers the social and environmental consequences of investors, both positive and negative, within the context of rigorous financial analysis" (Social Investment Forum, 2005). Thus, SRI has been considered a trending topic among investors over the past couple of decades. In the beginning, SRI just shunned financial stocks of companies from controversial business areas, such as alcohol, tobacco, gambling, military weapons, nuclear power business, and other business industries also denominated as "sin" assets (Kempf and Osthoff, 2007). However, the niche of SRI areas became larger; managers began to include social screens into their investment decisions, based on environmental, social and governance (ESG) criteria. Previous literature about SRI portfolio performance is not consensual due to different methods to evaluate portfolios' performance that leads to different results and conclusions. Moreover, the use of different data and different periods of time difficult the comparison of results across studies.

In this context, we borrow the arguments from Kempf and Osthoff (2007) and analyze if social high-rated investments generate higher returns than low-rated investments. Hence, we collect information from Asset4 database about the (social) ratings for a sample of U.S. companies and constructed portfolios according to different social sub-indicators, such as Product Responsibility, Community, Human Rights, Diversity and Opportunity, Employment Quality, Health and Safety, Training and Development, and Social Indicator. Based on the aggregate social indicator and in each sub-indicator, three types of portfolios were formed: 10% top and 10% bottom, which represents the 10% high-rated companies and the 10% low-rated companies, respectively; the difference between high- and low-rated companies is the portfolio of interest, which represents the long-short strategy. Our dataset includes 168 observations, from January of 2003 to December of 2016. Following the previous literature, the portfolio performance was evaluated using an unconditional and a conditional framework based on the Carhart (1997) four-factor model and the Fama and French (2015) five-factor model. Our results suggest that it does not make any difference in investors' returns investing in high- or low-rated portfolios. So, we concluded that investors can contribute to a good social value by investing in the high-rated portfolio because the difference between high- and low-rated portfolios' returns is not significant.

Moreover, by adding information about the economic cycle we conclude that performance, in general, changes in recession periods. Furthermore, when applying the "best-in-class" screening process, the results provide evidence that the Retail Sector generates higher returns in the case of high-rated portfolios and in the case of the long-short strategy (high-low rated portfolios). In sum, although investors are increasingly concerned about social issues, they also seek higher returns; in this context, investors are looking forward combining "business with pleasure", i.e, investing in companies with higher SRI rating should translate in higher returns comparing to companies with lower SRI rating. The remaining of this study is organized as follows. Section 2 provides a literature review highlighting the importance of SRI and outlines the research hypotheses. Section 3 describes the sample. Section 4 reports the empirical results. Section 5 concludes.

Literature Review and Hypotheses Development

According to prior literature (e.g., Statman and Glushkov, 2009), the results of SRI studies can be divided into three groups: i) studies that found that social screening policy generates higher returns; ii) studies that found that social screening policy generates lower returns; iii) studies that found no difference between socially responsible investments and conventional investments.

The first group of studies defends that expected returns of socially responsible stocks are higher than the expected returns of conventional stocks. The policy of adding social norms and values into investment decisions can generate new market opportunities, also as having an active policy relative to these issues can generate a competitive advantage as managers are able to make sustainable cost-efficient use of resources (Porter and Van der Linde, 1995). Thus, a more socially responsible company can generate more revenues than a less social responsible company. Moreover, some authors believe that SRI reflects the ability of the manager to predict how well the company will perform in the long term and this can be affected by the short-term thinking of the financial community. If this is true, then SRI funds may be highly profitable in the long-term. In this context, previous researchers use social filters as tools for selecting companies with higher management quality. Derwall *et al*. (2005) analyzed the environmental SRI criteria in the U.S. market from 1995 to 2003, and documented evidence that stocks of companies with good environmental records earned higher returns than other stocks; thus, these authors demonstrated a positive relation between social responsibility and abnormal stock return. Also, Kempf and Osthoff (2007) studied social sub-indicators and found that high-rated companies performed better than low-rated companies, where companies are rated according to social sub-indicators, such as community, diversity, employee relations, environment, human rights and products. This study is corroborated by Einolf (2007), who constructed a portfolio of U.S. stocks and examined whether ESG (Environmental, Social, Governmental) screening affects stock prices. He concluded that building a socially screened portfolio increases potential returns.

In this context, Statman and Glushkov (2009) examined the SRI performance of the U.S. market for 15 years and found a positive relation between SRI and employee relations, as so with the community variable. Those findings are corroborated by the results of Edmans (2011), who studied environmental and social SRI criteria in the U.S. market over 22 years and found a positive relation between SRI and the employee variable. Also, Gil-Bazo *et al*. (2010) provide for the U.S. market evidence that SRI funds perform better than conventional funds. Consistent with those prior results, Brzeszczyński and McIntosh (2014) uncovered a positive effect of social screens in portfolios composed of Socially Responsible (SR) stocks based in the United Kingdom, although their results are not statistically significant.

Despite the former evidence, Auer (2016) states that the type of ethical screening strategy applied by investors impacts portfolios' performance. Based on a sample of European stocks between 2004 and 2012, the author argues that positive screens might cause the underperformance of SRI portfolios due to the loss of diversification. Therefore, Auer (2016) suggests that investors should eliminate the worst (socially) high-rated firms. Consistent with this view, Nofsinger and Varma (2014) find that SR Investments provide additional protection during periods of market crisis, and Becchetti *et al*. (2015) document that SR Investments outperform conventional investments during the 2007 global financial crisis.

Contrary to the first, the second group of studies found that social screening generates lower returns comparing to no-screening investment. Therefore, Hong and Kacperczyk (2007) studied the performance of "sin" stocks in the U.S. market across the 1926-2004 period; the authors argue that investors are willing to sacrifice returns aiming to not compromise their values/norms, but sin stocks are held in smaller proportions by public pension funds compared to conventional stocks and receive less coverage from analysts than other stocks. Their findings also reveal a higher return of sin stocks relative to other stocks. The authors point out that the demand for sin stocks will decrease, increasing the supply, which in turns will lower the fundamental value of those stocks. Hence, the sin stocks will be appellative to diversify investors' portfolios. This argument is corroborated by Heinkel *et al*. (2001), who developed an equilibrium model where socially responsible investor avoids investing in sin stocks keeping the prices lower and making higher returns. Also, Hong and Kacperczyk (2007) uncover similar results. Hence, those prior results are similar to what Trinks and Scholtens (2017) uncovered; the authors investigated an international sample of more than 1,600 controversial stocks across 1991 and 2012 and find that investing in that type of stocks can result in additional risk-adjusted returns.

Kempf and Osthoff (2007) also studied the performance of sin stocks in the U.S. market from 1991 to 2004. Similarly to Hong and Kacperczyk (2007), Kempf and Osthoff (2007) also found that sin stocks outperformed comparable stocks, but their results are not statistically significant. Some studies defend that adding social norms and values into investment decision has a cost for the company and that cost should represent an increase in the price of goods and services that firms provide, which translates into a competitive disadvantage and lower profitability (Walley and Whitehead, 1994). Thereby, the main responsibilities that companies should have are to observe institutional rules/laws and act to maximize shareholders' profit.

The third group defends the "no effect" hypothesis, which postulates that the expected returns of socially responsible stocks are similar to the expected returns of conventional ones. Consistent with this hypothesis, Statman and Glushkov (2009) found that stocks of companies with good records on employee relations or similar social responsibility criteria registered higher returns compared with stocks of companies with poor ratings; however, they also found that stocks of 'shunned' companies registered higher returns than stocks of companies in other industries, the two effects offset each other and Statman and Glushkov (2009) do not reject the "no effect" hypothesis. Renneboog *et al*. (2008) show evidence for 17 countries (from 1991 to 2003) and point out that in most countries SRI funds do not underperform the conventional funds (except European and Asia SRI funds, where SRI underperforms regarding the conventional funds), which supports the "no effect" hypothesis. In this context, also Ayadi *et al*. (2016) for the Canadian market, and Leite *et al*. (2018) for the Swedish market provide similar evidence.

Auer and Schuhmacher (2016) examine the performance of socially high- and low-rated portfolios in the Asia-Pacific, the U.S., and Europe between 2004 and 2012 and provide evidence that in the Asia-Pacific and U.S. markets the "no effect" hypothesis holds; however, the authors document that in Europe high-rated portfolios tend to underperform low-rated portfolios depending on the social screens applied by investors.

Revelli and Viviani (2015) performed a meta-analysis based on 85 (empirical) studies and 190 experiments between 1972 and 2012 and conclude that including social screens in portfolio management does not generate financial costs nor benefits compared with conventional investments.

In sum, previous studies provide evidence that social screening policy generally affects portfolio performance. However, some studies (e.g., Kempf and Osthoff, 2007) examined the two sides (high- and low-rated) and their evidence suggests that investors can contribute for a good social value and still generate higher returns investing in the high-rated portfolio. Thus, we formulate our first hypothesis:

Hypothesis 1: High-rated portfolios generate higher returns compared to low-rated portfolios.

Besides the positive screening (i.e., using social screens), the "best-in-class" screening also assures that the resulting portfolio is balanced across industries. According to Kempf and Osthoff (2007), the "best-in-class" screening augments the alphas because it assures that the generated portfolios are balanced across industries. Based on this argument, we formulate our second hypothesis:

Hypothesis 2: "Best-in-Class" screening generates high-rated portfolios that outperform low-rated portfolios.

Sample Description

According to the purpose of this research, we formed two types of screening portfolios - positive and "best-in-class" - based on social indicators. For the positive portfolio screening, we collected data from Asset4, which is managed by Thomson Reuters, that provides ESG (Environmental, Social and Governance) data on more than 5000 companies. Asset4 publishes new ratings every year, i.e, every year ratings are updated, which means that some companies are dropped out and others are added to our database. Furthermore, ESG Asset4 database only supplies SRI rating information since 2002; hence, our sample only starts in 2003 because ratings were collected at the end of each year and are lagged one year. The information about companies and ratings is not reported but is available upon request.

We collected the ratings for all companies from 2003 to 2016, according to their SRI ratings. ESG supplies information regarding the overall balanced view of a company's performance using three indicators: Environmental, Social and Corporate Governance. The environmental indicator measures the company's impact on the natural systems, such as air, land, and water, as well as on complete ecosystems. It reflects how well a company uses best management practices to avoid environmental risks/incidents as well as the ability to generate long term value to shareholders using environmental opportunities. The social indicator measures a company's capacity to generate trust and loyalty with its workforce to customers and society, through its use of the best management practices. It reflects the company's reputation and the health of its license to operate, which are key factors in determining its ability to generate long term shareholder value. The corporate governance indicator measures a company's systems and processes, which ensure that its board members and executives act in the best interests of its long-term shareholders. It reflects a company's capacity, through its use of best management practices, to direct and control its rights and responsibilities through the creation of incentives, as well as checks and balances to generate long term shareholder value.

Consistent with our aims, and based on the ASSET4 rating, three equally-weighted portfolios were formed for each social sub-indicator: i) the high-rated portfolio, which consists on the top 10% of all stocks; ii) the low-rated portfolio, which consists on the bottom 10% of all

stocks; iii) the long-short strategy, which consists on the difference between the high- and low-rated portfolios. The social indicator is divided into seven sub-indicators: customer/product responsibility, society/community, society/human rights, workforce/diversity and opportunity, workforce/employment quality, workforce/health and safety, workforce/training and development.

Next, we estimate discrete returns of the stocks and the benchmark portfolio S&P500. We collected from Datastream the monthly "Return Index" for all companies rated in Asset4. Discrete returns were estimated as follows:

$$Return_t = \frac{Stock\ Price_t - Stock\ Price_{t-1}}{Stock\ Price_{t-1}} \quad (1)$$

For the "best-in-class" screening process companies were assigned into nine different industries, based on their SIC codes. Then, all companies were rated according to SRI ratings of each industry class and were assigned to equally-weighted portfolios.

To assess the portfolios' performance, we estimate both the Carhart (1997) four-factor model and the Fama and French (2015) five-factor model, which is an extension of Fama and French (1993) three-factor model. The independent variables, namely, the excess return of the market portfolio, size, value, momentum, profitability and investment variables, were collected from the Kenneth R. French data library available online. The S&P 500 index was collected from CRSP (Center for Research in Security Prices).

Finally, and motivated by the conditional framework, we also collected information about the economic cycle from the National Bureau of Economic Research (NBER), which is a procedure consistent with previous studies (e.g., Nofsinger & Varma, 2014).

Descriptive Statistics

Table 1 describes the equally-weighted portfolios for each social sub-indicator. We observe that, on average, the (mean) excess return of portfolios are positive in the high-rated portfolio and in the low-rated portfolio. Skewness and kurtosis are far from their normal values. If the skewness is negative, the left tail is longer than the right tail, which suggests the underestimation of the risk. On the other hand, if the skewness is positive, the distribution has a longer right tail, which suggests the overestimation of the risk. The results for the Jarque-Bera test reject the hypothesis of the portfolios' returns being normally distributed; this evidence reinforces the use of an alternative conditional model of performance evaluation (Adcock *et al*., 2012).

Table 1: Descriptive Statistics

	PRH	PRL	H-L	COH	COL	H-L	HRH	HRL	H-L	DOH	DOL	H-L
Mean	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.00
Median	0.02	0.01	0.00	0.01	0.02	0.00	0.01	0.01	0.00	0.01	0.01	0.00
Std.Dev.	0.05	0.05	0.02	0.04	0.06	0.03	0.05	0.06	0.02	0.04	0.06	0.02
Skew	-0.83	-0.28	-0.11	-0.72	-0.05	-1.77	-0.57	-0.06	-0.72	-0.27	-0.19	-0.31
Kurt	6.63	5.01	3.60	6.24	7.74	11.77	6.73	6.68	5.89	5.41	7.38	5.38
Max.	0.15	0.20	0.06	0.14	0.25	0.06	0.16	0.24	0.06	0.17	0.25	0.09
Min.	-0.23	-0.21	-0.06	-0.20	-0.29	-0.15	-0.22	-0.27	-0.11	-0.16	-0.28	-0.11
J.-Bera	112	30.7	2.9	87.9	157.5	625.5	106.4	94.9	72.9	42.7	135.4	42.4
***P*-value**	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Obs.	168	168	168	168	168	168	168	168	168	168	168	168

Table 1 (Cont.)

	EQH	EQL	H-L	HSH	HSL	H-L	TDH	TDL	H-L	SOH	SOL	H-L
Mean	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.01
Median	0.01	0.02	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.02	0.01
Std.Dev.	0.04	0.06	0.03	0.05	0.06	0.03	0.05	0.06	0.02	0.04	0.06	0.04

Skew	-0.56	-0.03	-1.34	-0.69	-0.23	0.13	-0.50	-0.40	-0.15	-0.64	-0.39	-0.64
Kurt	5.29	6.95	9.13	7.09	6.23	2.90	7.39	7.25	4.15	6.24	7.73	6.24
Max.	0.14	0.23	0.06	0.17	0.22	0.07	0.20	0.27	0.07	0.14	0.26	0.14
Min.	-0.17	-0.29	-0.15	-0.24	-0.24	-0.07	-0.22	-0.24	-0.08	-0.19	-0.27	-0.19
J.-Bera	45.5	109.1	313.6	130.5	74.5	0.5	141.6	131	9.9	84.9	160.7	84.9
***P*-value**	0.00	0.00	0.00	0.00	0.00	0.76	0.00	0.00	0.01	0.00	0.00	0.00
Obs.	168	168	168	168	168	168	168	168	168	168	168	168

Table 1 provides descriptive statistics for each portfolio. Each portfolio is composed of companies that were rated according to seven social sub-indicators: PR means Product Responsibility; CO means Community; HR means Human Rights; DO means Diversity and Opportunity; EQ means Employment Quality; HS means Health and Safety; TD means Training and Development. SO means Social Indicator. The suffix H means "High". The suffix L means "Low". H-L represents the long-short strategy and is the difference between the high and low portfolio for each sub-indicator. The sample period is 2003-2016, which totalizes 168 observations. Jarque-Bera test for normality performed under the null hypothesis that returns are normally distributed.

Empirical Results

Positive Screening: Unconditional Analysis

Four-Factor Model

Following previous research, Carhart (1997) extended the Fama and French (1993) model and proposed a four-factor model; the author added the variable Momentum (MOM) proposed by Jegadeesh and Titman (1993).

The equation (2) displays the Carhart (1997) four-factor model:

$$r_{i,t} = \alpha_i + \beta_{1i}(r_{m,t}) + \beta_{2i}(SMB_t) + \beta_{3i}(HML_t) + \beta_{4i}(MOM_t) + \varepsilon_{it} \quad (2)$$

Where the dependent variable ($r_{i,t}$) represents the excess return of portfolio i in month t (excess return over the risk-free rate). α_i represents the abnormal return, which suggests that if alpha is positive and statistically significant, the stock outperforms the market. $\beta_{1i}, \beta_{2i}, \beta_{3i}$ are the factors' coefficients, which represent the beta of each one of the independent variables, where the independent variable $r_{m,t}$ represents the excess return of the market m in the month t (excess return over the risk-free rate); the independent variable SMB_t means small firms minus big firms, i.e., the difference in expected return between a portfolio of small stocks and a portfolio of large stocks; the independent variable HML_t means high minus low and represents the difference between the portfolio return of high book-to-market stocks and a portfolio return of low book-to-market stocks; the independent variable MOM_t is momentum and means the tendency of a stock price to continue rising if it is going up or to continue declining if it is going down. Table 2 shows the results using the Carhart (1997) four-factor unconditional model.

Table 2 - Carhart (1997) Four-Factor (Unconditional) Model

	α_i	β_{1i}	β_{2i}	β_{3i}	β_{4i}	R^2
Panel A- Social Indicator						
SOH	0.223***	0.973***	0.126***	-0.029	-0.104***	95
	0.004	*0.000*	*0.000*	*0.305*	*0.000*	
SOL	0.370***	1.059***	0.571***	0.157***	-0.211***	91
	0.007	*0.000*	*0.000*	*0.009*	*0.000*	
H-L	-0.147	-0.086*	-0.445***	-0.187***	0.107***	44
	0.278	*0.084*	*0.000*	*0.006*	*0.008*	
Panel B- Social Sub-Indicator						
PRH	0.092	1.099***	0.306***	-0.034	-0.118***	94
	0.415	*0.000*	*0.000*	*0.572*	*0.000*	
PRL	0.176	1.041***	0.510***	0.069	-0.169***	90
	0.228	*0.000*	*0.000*	*0.263*	*0.000*	
H-L	-0.085	0.057	-0.204***	-0.102*	0.051	10
	0.488	*0.240*	*0.000*	*0.092*	*0.220*	
COH	0.144*	1.009***	0.169***	0.010	-0.085***	95
	0.077	*0.000*	*0.000*	*0.810*	*0.002*	
COL	0.435***	1.097***	0.651***	-0.137*	-0.279***	89
	0.009	*0.000*	*0.000*	*0.096*	*0.000*	
H-L	-0.290*	-0.088*	-0.482***	0.147	0.194***	35
	0.090	*0.074*	*0.000*	*0.133*	*0.004*	
HRH	0.158*	1.032***	0.221***	-0.040	-0.130***	95
	0.053	*0.000*	*0.000*	*0.311*	*0.000*	
HRL	0.073	1.156***	0.490***	0.211***	-0.207***	94
	0.579	*0.000*	*0.000*	*0.000*	*0.001*	
H-L	0.085	-0.124***	-0.268***	-0.251***	0.077	41
	0.516	*0.001*	*0.000*	*0.000*	*0.184*	
DOH	0.3323***	0.925***	0.126***	0.085*	-0.130***	95
	0.000	*0.000*	*0.003*	*0.068*	*0.000*	
DOL	0.112	1.114***	0.619***	0.016	-0.207***	93
	0.348	*0.000*	*0.000*	*0.751*	*0.000*	
H-L	0.220	-0.189***	-0.494***	0.069	0.076**	48
	0.114	*0.001*	*0.000*	*0.328*	*0.027*	
EQH	0.1786**	0.973***	0.190***	0.024	-0.070*	95
	0.023	*0.000*	*0.000*	*0.388*	*0.000*	
EQL	0.3542**	1.082***	0.650***	0.126	-0.219***	91
	0.012	*0.000*	*0.000*	*0.113*	*0.001*	
H-L	-0.176	-0.108**	-0.460***	-0.102	0.150***	45
	0.224	*0.021*	*0.000*	*0.211*	*0.010*	
HSH	0.311**	1.083***	0.233***	-0.028	-0.105**	89
	0.043	*0.000*	*0.000*	*0.725*	*0.019*	
HSL	0.200*	1.029***	0.595***	0.130**	-0.199***	92
	0.070	*0.000*	*0.000*	*0.047*	*0.000*	
H-L	0.111	0.054	-0.363***	-0.158	0.095	17
	0.556	*0.399*	*0.000*	*0.157*	*0.140*	
TDH	0.2133**	1.036***	0.223***	-0.003	-0.107***	95
	0.015	*0.000*	*0.000*	*0.919*	*0.009*	
TDL	0.141	1.126***	0.624***	0.115	-0.150***	95
	0.323	*0.000*	*0.000*	*0.160*	*0.001*	
H-L	0.072	-0.091**	-0.401***	-0.118	0.043*	38
	0.576	*0.033*	*0.000*	*0.140*	*0.094*	

Above table shows the output of the *Carhart (1997) four-factor model*. Each portfolio is formed of companies that ASSET4 classifies according to the following criteria - Social, Environmental and Governance. In our study, each portfolio is formed of companies that were rated according to seven social sub-indicators: PR means Product Responsibility; CO means Community; HR means Human Rights; DO means Diversity and Opportunity; EQ means Employment Quality; HS means Health and Safety; TD means Training and Development. SO means Social Indicator. The suffix H means "High". The suffix L means "Low". α_i represents the returns of each portfolio, measured as %. $\beta_{1i}, \beta_{2i}, \beta_{3i}, \beta_{4i}$ are the coefficients of independent variables of the Carhart (1997) four-factor model. H-L represents the long-short strategy, calculated as the difference between the high and low portfolio for each sub-indicator. S&P500 is the market benchmark. ***, ** and * mean statistical significance at the 1 percent level, 5 percent level and 10 percent level, respectively. The *p*-value of *t*-Statistic is reported below each coefficient' estimate; *t*-Statistic was estimated based on Newey-West heteroskedasticity and autocorrelation adjusted standard errors. The sample period is 2003-2016, which totalizes 168 observations. Adjusted R^2 reported (expressed in %). Panel A reports the results using the social indicator and Panel B presents the results using the social indicator divided into seven sub-indicators.

We can observe in Panel A of Table 2 that the alphas' coefficients of the high-rated portfolio (SOH) and the low-rated portfolio (SOL) are both positive and significant at the 1 percent level. This suggests that investors generate higher returns when investing in both high-rated and low-rated portfolios. Nevertheless, our main variable of interest is the long-short strategy, denoted by H-L, which the coefficient' estimate is not significant.

The results of $\beta_{1i}(R_{M_t} - R_{F_t})$ display positive and significant estimates (at the 1 percent level) for high-rated and low-rated portfolios. Regarding the long-short strategy (H-L), the coefficient' estimate is negative (and significant). These results suggest that the market cannot generate higher returns when investors go long in the high-rated portfolio and short in the low-rated portfolio.

The coefficients of $\beta_{2i}(SMB_t)$ are positive and significant at the 1 percent level for both SOH and SOL portfolios, meaning that SOH and SOL include more small caps than large caps. However, the H-L portfolio is negative, which means the high-rated portfolio (SOH) includes more large caps than the low-rated portfolio (SOL). Regarding the variable HML_t, we observe that the H-L portfolio is negative and significant, which suggests the H-L portfolio includes more growth stocks than value stocks. Finally, the coefficient of the variable Momentum β_{4i} is negative and significant at the 1 percent level in both SOH and SOL portfolios, and positive and significant at the 1 percent level for the H-L portfolio. This evidence suggests that both the high-rated portfolio (SOH) and low-rated portfolio (SOL) include more stocks that underperformed in the last year.

Panel B of Table 2 displays the results of estimates of high- and low-rated portfolios for each sub-indicator. Results show that, on average, high-rated portfolios present positive and significant alphas. Regarding the low-rated portfolios, only Community (COL), Employment Quality (EQL), and Health and Safety (HSL) sub-indicators display significant (and positive) estimates. Concerning the long-short strategy (H-L), only in the Community sub-indicator we find a negative and significant alpha at the 10 percent level.

Five-Factor Model

Fama and French (2015) extended their three-factor model (Fama and French, 1993), and proposed a five-factor model. Hence, the authors added to their three-factor model two independent variables to evaluate the performance of a portfolio, which are Robust minus Weak profitability (RMW), and Conservative minus Aggressive (CMA).

$$r_{i,t} = \alpha_i + \beta_{1i}(r_{m,t}) + \beta_{2i}(SMB_t) + \beta_{3i}(HML_t) + \beta_{4i}(RMW_t) + \beta_{5i}(CMA_t) + \varepsilon_{it} \quad (3)$$

Where, $\beta_{1i}, \beta_{2i}, \beta_{3i}, \beta_{4i}, \beta_{5i}$ are the factors' coefficients, where the independent variables $r_{m,t}, SMB_t, HML_t$ represent the same variables as described before. Additionally, β_{4i} is the coefficient of RMW (Robust minus Weak), which represents the difference in returns between a

portfolio of high stocks' profitability and a portfolio of low stocks' profitability, and β_{5i} is the coefficient of CMA (Conservative minus Aggressive), that is the difference in returns between a portfolio of high investment stocks and a portfolio of low investment stocks. Once again, α_i represents the abnormal return, which suggests that if alpha is positive and statistically significant the stock outperforms the market. Table 3 provides the results.

Table 3 - Fama and French (2015) Five-Factor (Unconditional) Model

	α_i	β_{1i}	β_{2i}	β_{3i}	β_{4i}	β_{5i}	R^2
Panel A- Social Indicator							
SOH	0.190**	1.011***	0.129***	0.036	0.037	-0.018	94
	0.024	*0.000*	*0.001*	*0.405*	*0.561*	*0.846*	
SOL	0.411***	1.086***	0.533***	0.361***	-0.168	-0.304**	89
	0.004	*0.000*	*0.000*	*0.000*	*0.125*	*0.017*	
H-L	-0.221	-0.074*	-0.404***	-0.325***	0.204*	0.286***	44
	0.105	*0.072*	*0.000*	*0.000*	*0.052*	*0.007*	
Panel B- Social Sub-Indicator							
PRH	0.127	1.108***	0.274***	0.075	-0.138*	-0.147	94
	0.245	*0.000*	*0.000*	*0.203*	*0.057*	*0.114*	
PRL	0.202	1.066***	0.494***	0.255***	-0.089	-0.333***	89
	0.190	*0.000*	*0.000*	*0.003*	*0.358*	*0.001*	
H-L	-0.075	0.041	-0.220***	-0.181***	-0.048	0.187***	10
	0.538	*0.399*	*0.000*	*0.007*	*0.669*	*0.001*	
COH	0.066	1.065***	0.216***	0.085**	0.206***	-0.105	95
	0.447	*0.000*	*0.000*	*0.030*	*0.001*	*0.141*	
COL	0.505***	1.124***	0.560***	0.068	-0.343*	-0.153	86
	0.005	*0.000*	*0.000*	*0.513*	*0.075*	*0.303*	
H-L	-0.439***	-0.059	-0.344***	0.018	0.549***	0.048	35
	0.010	*0.158*	*0.002*	*0.859*	*0.010*	*0.751*	
HRH	0.0990	1.088***	0.237***	0.044	0.099	-0.036	93
	0.332	*0.000*	*0.000*	*0.374*	*0.214*	*0.743*	
HRL	0.140	1.170***	0.419***	0.379***	-0.279***	-0.175*	92
	0.279	*0.000*	*0.000*	*0.000*	*0.006*	*0.058*	
H-L	-0.041	-0.082*	-0.182**	-0.335***	0.379***	0.140	45
	0.747	*0.062*	*0.014*	*0.000*	*0.000*	*0.177*	
DOH	0.297***	0.969***	0.117**	0.148**	0.007	0.050	93
	0.003	*0.000*	*0.022*	*0.021*	*0.899*	*0.580*	
DOL	0.107	1.161***	0.595***	0.175**	-0.076	-0.145*	91
	0.382	*0.000*	*0.000*	*0.024*	*0.493*	*0.061*	
H-L	0.1890	-0.191***	-0.479***	-0.027	0.083	0.200*	47
	0.195	*0.001*	*0.000*	*0.724*	*0.447*	*0.067*	
EQH	0.186**	0.985***	0.177***	0.081**	-0.047	-0.062	95
	0.016	*0.000*	*0.000*	*0.014*	*0.427*	*0.375*	
EQL	0.357**	1.128***	0.618***	0.295***	-0.105	-0.153	88
	0.026	*0.000*	*0.000*	*0.004*	*0.395*	*0.141*	
H-L	-0.171	-0.143***	-0.441***	-0.214**	0.057	0.091	39
	0.271	*0.003*	*0.000*	*0.028*	*0.581*	*0.389*	
HSH	0.279*	1.121***	0.243***	0.058	0.054	-0.099	89
	0.075	*0.000*	*0.000*	*0.498*	*0.517*	*0.366*	
HSL	0.255**	1.046***	0.523***	0.266***	-0.271**	-0.069	90
	0.030	*0.000*	*0.000*	*0.000*	*0.018*	*0.530*	
H-L	0.024	0.075	-0.280***	-0.208*	0.325***	-0.030	17

	α_i	β_{1i}	β_{2i}	β_{3i}	β_{4i}	β_{5i}	R^2
	0.906	*0.178*	*0.010*	*0.080*	*0.005*	*0.850*	
TDH	0.166**	1.081***	0.231***	0.056	0.066	0.012	94
	0.044	*0.000*	*0.001*	*0.176*	*0.436*	*0.881*	
TDL	0.155	1.152***	0.600***	0.231***	-0.106	-0.107	90
	0.272	*0.000*	*0.000*	*0.005*	*0.338*	*0.473*	
H-L	0.012	-0.071	-0.364***	-0.176**	0.172**	0.120	38
	0.929	*0.100*	*0.000*	*0.022*	*0.015*	*0.316*	

Above table shows the output of the *Fama and French (2015) five-factor model*. In our study, each portfolio is formed of companies that were rated according to seven social sub-indicators, as described in Table 2. The suffix H means "High". The suffix L means "Low". α_i represents the return of each portfolio, measured as %. $\beta_{1i}, \beta_{2i}, \beta_{3i}, \beta_{4i}, \beta_{5i}$ are the coefficients of independent variables of the Fama and French (2015) five-factor model. H-L represents the long-short strategy, calculated as the difference between the high and low portfolio of each sub-indicator. S&P500 is the market index benchmark. ***, ** and * mean statistical significance at the 1 percent level, 5 percent level and 10 percent level, respectively. The *p*-value of *t*-Statistic is reported below each coefficient' estimate; *t*-Statistic was estimated based on Newey-West heteroskedasticity and autocorrelation adjusted standard errors. The sample period is 2003-2016, which totalizes 168 observations. Adjusted R^2 reported (in %). Panel A reports the results using the social indicator and Panel B presents the results using the social indicator divided into seven sub-indicators.

In Panel A of Table 3, we observe that coefficients' estimates of alphas, β_1, β_2, and β_3 are very similar to the ones uncovered in the Panel A of Table 2. Regarding the new variable Robust minus Weak profitability (RMW), only the H-L portfolio displays significance, and with respect to Conservative minus Aggressive (CMA), the estimate of the low-rated portfolio is negative and significant, meaning that portfolio is composed of companies with aggressive investment behavior.

Once again, in Panel B of Table 3, the sign and significance of coefficients of alphas, β_1, β_2, and β_3 are identical to the results reported in the Panel B of Table 2. Regarding the variable RMW, most of the significant values are negative, meaning that the low-rated portfolio does not invest, on average, in robust stocks. Concerning the variable CMA, most of the estimates are not significant.

So far, our results drive us to reject the hypothesis 1; our variable of interest, the long-short strategy (H-L), does not display, on average, statistical significance.

However, unconditional models tend to produce incorrect performance estimates, since they can mix up the normal risk variability and risk premiums with managers' performance. Furthermore, and according to previous researchers (Leite and Cortez, 2009), these measures have been recognized as biased, especially when portfolio managers exhibit market-timing skills or engage in dynamic investment strategies resulting in time-varying risk.

Conditional Analysis

Previous evidence defends that conditional models incorporate the changes in risk over time, producing more reliable and robust estimates (e.g., Christopherson *et al*., 1998). Thus, we estimate a conditional model, which is justified by the evidence that conditional framework models allow alpha and betas to vary over time.

An alternative approach to conditioning portfolio performance models to the state of the economy is to add a dummy variable. This method presents advantages because it avoids problems of persistent time series in the information variables and it assumes that betas and alphas are a linear function of the information variables (Areal *et al*., 2013).

According to Areal *et al*. (2013), the Carhart (1997) conditional four-factor model can be expressed as in equation (4).

$$r_{i,t} = \alpha_i + \alpha_{rec,i} D_t + \beta_{1i} * (r_{m,t}) + \beta_{1rec,i} * r_{m,t} * D_t + \beta_{2i} * HML_t + \beta_{2rec,i} * HML_t * D_t + \beta_{3i} * SMB_t + \beta_{3rec,i} * SMB_t * D_t + \beta_{4i} * MOM_t + \beta_{4rec,i} * MOM_t * D_t + \varepsilon_{it} \quad (4)$$

where D_t represents a dummy variable that assumes a value of 1 in periods of recessions/crisis periods, and zero otherwise.

Table 4 displays the results using the conditional four-factor model (Areal *et al*., 2013). As we can see in Panel A of Table 4, the alpha displays significant estimates in expansion (α_i) periods and insignificant estimates in recession (α_{rec}) periods; this evidence suggests that the performance changes in recession periods. Similar results are uncovered when adding social screening, as reported in Panel B.

Once again, the estimates of the variable of interest (H-L) is not significant (on average) across estimations. Moreover, results from the conditional analysis are consistent with previous research, which provides evidence of stocks present underperformance or neutral performance relative to the market (e.g., Leite and Cortez, 2009).

Overall, the above evidence provided in the unconditional and conditional analysis does not support hypothesis 1.

Table 4- Carhart (1997) Four-Factor (Conditional) Model

Panel A- Social Indicator

	α_i	α_{irec}	β_{1i}	$\beta_{1i}rec$	β_{2i}	$\beta_{2i}rec$	β_{3i}	β_{3irec}	β_{4i}	β_{4irec}	R^2
SOH	0.239***	0.091	0.955***	0.058	-0.043	0.116*	-0.083***	0.025	0.001	-0.006	96
	0.004	*0.708*	*0.000*	*0.149*	*0.213*	*0.068*	*0.006*	*0.717*	*0.708*	*0.872*	
SOL	0.386***	-0.783	1.048***	-0.062	0.180***	0.577*	-0.102***	-0.156	-0.008	-0.190***	92
	0.003	*0.303*	*0.000*	*0.612*	*0.009*	*0.083*	*0.007*	*0.245*	*0.303*	*0.000*	
H-L	-0.147	0.874	-0.093**	0.120	-0.222***	-0.461	0.019	0.181	0.009	0.184***	46
	0.297	*0.234*	*0.016*	*0.387*	*0.004*	*0.189*	*0.724*	*0.208*	*0.234*	*0.006*	
Panel B- Social Sub-Indicator											
PRH	0.159*	-0.225	1.045***	0.169**	0.032	0.224	-0.109***	-0.280**	-0.002	0.014	95
	0.090	*0.678*	*0.000*	*0.017*	*0.514*	*0.209*	*0.001*	*0.024*	*0.678*	*0.758*	
PRL	0.127	0.618	1.035***	0.094	0.135**	-0.171	-0.162***	-0.168	0.006	-0.003	90
	0.392	*0.479*	*0.000*	*0.387*	*0.019*	*0.476*	*0.000*	*0.268*	*0.479*	*0.972*	
H-L	0.032	-0.843	0.010	0.075	-0.103	0.395**	0.053	-0.112	-0.008	0.017	11
	0.787	*0.105*	*0.843*	*0.430*	*0.121*	*0.028*	*0.301*	*0.498*	*0.105*	*0.854*	
COH	0.138	0.175	0.984***	0.098**	0.054	0.219**	-0.040	-0.170**	0.002	-0.044	95
	0.116	*0.489*	*0.000*	*0.031*	*0.205*	*0.026*	*0.395*	*0.022*	*0.489*	*0.420*	
COL	0.474***	-0.799	1.093***	-0.072	-0.142	0.416	-0.237**	-0.062	-0.008	-0.082	89
	0.003	*0.481*	*0.000*	*0.625*	*0.202*	*0.265*	*0.017*	*0.716*	*0.481*	*0.495*	
H-L	-0.336*	0.974	-0.108*	0.170	0.196	-0.197	0.197	-0.108	0.010	0.038	34
	0.054	*0.416*	*0.060*	*0.275*	*0.115*	*0.637*	*0.139*	*0.572*	*0.416*	*0.814*	
HRH	0.142*	0.103	1.021***	0.038	-0.026	0.253*	-0.081***	-0.070	0.001	-0.055	95
	0.084	*0.774*	*0.000*	*0.509*	*0.542*	*0.075*	*0.002*	*0.423*	*0.774*	*0.115*	
HRL	0.040	-0.125	1.155***	-0.037	0.251****	-0.072	-0.097***	-0.089	-0.001	-0.228***	94
	0.730	*0.893*	*0.000*	*0.699*	*0.000*	*0.623*	*0.006*	*0.421*	*0.893*	*0.009*	
H-L	0.102	0.228	-0.133***	0.075	-0.277***	0.325**	0.016	0.019	0.002	0.173*	42
	0.464	*0.794*	*0.010*	*0.453*	*0.000*	*0.027*	*0.705*	*0.884*	*0.794*	*0.082*	
DOH	0.238	0.272	0.961	-0.105**	0.088	0.166	-0.068	0.015	0.003	-0.108***	95
	0.003	*0.199*	*0.000*	*0.013*	*0.057*	*0.136*	*0.013*	*0.841*	*0.199*	*0.003*	
DOL	0.147	-0.617	1.085	0.016	0.056	0.391*	-0.113	-0.193	-0.006	-0.162*	93
	0.178	*0.541*	*0.000*	*0.905*	*0.348*	*0.088*	*0.001*	*0.106*	*0.541*	*0.051*	
H-L	0.090	0.889	-0.125	-0.120	0.033	-	0.046	0.207	0.009	0.053	49

	α_i	α_{irec}	β_{1i}	$\beta_{1i}rec$	β_{2i}	$\beta_{2i}rec$	β_{3i}	β_{3irec}	β_{4i}	β_{4irec}	R^2
						0.225					
	0.476	*0.397*	*0.007*	*0.430*	*0.590*	*0.428*	*0.214*	*0.198*	*0.397*	*0.544*	
EQH	0.166*	-0.050	0.977***	-0.027	0.028	0.011	-0.038	-0.003	0.000	-0.063**	95
	0.073	*0.901*	*0.000*	*0.647*	*0.440*	*0.932*	*0.111*	*0.962*	*0.901*	*0.040*	
EQL	0.325**	-0.774	1.092***	-0.129	0.185*	0.417*	-0.089	-0.231	-0.008	-0.267***	91
	0.029	*0.367*	*0.000*	*0.297*	*0.057*	*0.071*	*0.104*	*0.150*	*0.367*	*0.000*	
H-L	-0.159	0.724	-0.115**	0.103	-0.158	-0.407*	0.051	0.228	0.007	0.204***	47
	0.336	*0.195*	*0.011*	*0.317*	*0.136*	*0.050*	*0.355*	*0.160*	*0.195*	*0.003*	
HSH	0.343**	-0.083	1.035***	0.187**	0.111*	0.126	-0.100	-0.498***	-0.001	0.005	90
	0.019	*0.896*	*0.000*	*0.028*	*0.069*	*0.272*	*0.129*	*0.000*	*0.896*	*0.954*	
HSL	0.206*	-1.270*	1.075***	-0.292**	0.081	0.449	-0.146***	0.093	-0.013*	-0.152**	92
	0.069	*0.092*	*0.000*	*0.012*	*0.273*	*0.203*	*0.002*	*0.468*	*0.092*	*0.022*	
H-L	0.137	1.187**	-0.041	0.479***	0.030	-0.324	0.046	-0.591***	0.012**	0.157	27
	0.496	*0.016*	*0.380*	*0.000*	*0.778*	*0.331*	*0.658*	*0.000*	*0.016*	*0.222*	
TDH	0.217***	-0.294	1.025***	-0.008	0.000	0.464**	-0.037*	-0.072	-0.003	-0.096**	95
	0.005	*0.563*	*0.000*	*0.914*	*0.997*	*0.010*	*0.085*	*0.288*	*0.563*	*0.025*	
TDL	0.208**	-1.472	1.109***	-0.085	0.192**	0.499	-0.074*	-0.358**	-0.015	-0.184***	92
	0.046	*0.103*	*0.000*	*0.517*	*0.022*	*0.126*	*0.095*	*0.014*	*0.103*	*0.005*	
H-L	0.008	1.178**	-0.084***	0.077	-0.192***	-0.035	0.037	0.285**	0.012**	0.088*	39
	0.947	*0.012*	*0.009*	*0.360*	*0.010*	*0.918*	*0.406*	*0.016*	*0.012*	*0.075*	

This table shows the output of the four-factor (conditional) model. In our study, each portfolio is composed of companies that were rated according to seven social sub-indicators, as described in Table 2. The suffix H means "High". The suffix L means "Low". α_i represents the returns of each portfolio, measured as %. $\beta_{1i}, \beta_{2i}, \beta_{3i}, \beta_{4i}$ are the coefficients of independent variables of the Carhart (1997) four-factor model. H-L represents the long-short strategy, calculated as the difference between the high and low portfolio for each sub-indicator. S&P500 is the market benchmark. ***, ** and * mean statistical significance at the 1 percent level, 5 percent level and 10 percent level, respectively. The *p*-value of *t*-Statistic is reported below each coefficient' estimate; *t*-Statistic was estimated based on Newey-West heteroskedasticity and autocorrelation adjusted standard errors. The sample period is 2003-2016, which totalizes 168 observations. Adjusted R^2 reported (in %). Panel A reports the results using the social indicator and Panel B presents the results using the social indicator divided into seven sub-indicators.

Best-in-Class Screening

Per hypothesis 2, we expect that the "best-in-class" screening augments the alphas because it assures that the generated portfolios are balanced across industries (Kempf and Osthoff, 2007). Thus, we divided our sample according to each SIC code, considering a total of nine different industries. Table 5 presents the results.

Table 5 - "Best-in-class" screening using Carhart (1997) Four-Factor Model

	Alpha	S&P500	SMB	HML	MOM	R^2
MH	0.008	1.015***	0.351***	-0.038	-0.093***	90
	0.987	*0.000*	*0.000*	*0.690*	*0.002*	
ML	0.313	0.927***	0.569***	0.072	-0.155***	84
	0.605	*0.000*	*0.000*	*0.446*	*0.000*	
H-L	-0.100	0.088***	-0.219***	-0.110	0.062***	14

	Alpha	S&P500	SMB	HML	MOM	R^2
	0.172	*0.000*	*0.000*	*0.446*	*0.000*	
CH	0.210*	0.928***	0.212***	0.007	-0.063**	90
	0.071	*0.000*	*0.000*	*0.926*	*0.040*	
CL	0.509**	1.002***	0.701***	-0.139	-0.256***	85
	0.014	*0.000*	*0.000*	*0.163*	*0.000*	
H-L	-0.299**	-0.074***	-0.489***	0.146	0.194***	36
	0.014	*0.000*	*0.000*	*0.163*	*0.000*	
MAH	0.220*	0.958***	0.261***	-0.045	-0.105***	91
	0.069	*0.000*	*0.000*	*0.478*	*0.000*	
MAL	0.148	1.063***	0.539***	0.207***	-0.182**	90
	0.394	*0.000*	*0.000*	*0.009*	*0.010*	
H-L	0.072	-0.105***	-0.278***	-0.253***	0.077**	42
	0.394	*0.000*	*0.000*	*0.009*	*0.010*	
TH	0.383***	0.869***	0.156***	0.079	-0.105***	93
	0.000	*0.000*	*0.000*	*0.162*	*0.005*	
TL	0.186	1.022***	0.668***	0.013	-0.183***	89
	0.257	*0.000*	*0.000*	*0.874*	*0.003*	
H-L	0.197	-0.153***	-0.512***	0.065	0.078***	47
	0.257	*0.000*	*0.000*	*0.874*	*0.003*	
WH	0.241**	0.897***	0.230***	0.021	-0.047*	90
	0.030	*0.000*	*0.000*	*0.705*	*0.055*	
WL	0.432**	0.980***	0.703***	0.126	-0.199***	87
	0.018	*0.000*	*0.000*	*0.242*	*0.004*	
H-L	-0.191**	-0.084***	-0.472***	-0.105	0.152***	45
	0.018	*0.000*	*0.000*	*0.242*	*0.004*	
RH	0.400**	0.960***	0.297***	-0.024	-0.091*	81
	0.050	*0.000*	*0.000*	*0.828*	*0.085*	
RL	0.248**	0.982***	0.622***	0.120*	-0.167***	91
	0.050	*0.000*	*0.000*	*0.065*	*0.000*	
H-L	0.152*	-0.022***	-0.325***	-0.144*	0.076***	18
	0.058	*0.000*	*0.000*	*0.065*	*0.000*	
FH	0.279**	0.956***	0.266***	-0.007	-0.083*	90
	0.030	*0.000*	*0.000*	*0.898*	*0.064*	
FL	0.214	1.036***	0.672***	0.112	-0.125**	88
	0.226	*0.000*	*0.000*	*0.287*	*0.011*	
H-L	0.065	-0.081***	-0.407***	-0.119	0.041**	39
	0.226	*0.000*	*0.000*	*0.287*	*0.011*	
SH	0.284**	0.901***	0.165***	-0.033	-0.081***	91
	0.012	*0.000*	*0.000*	*0.448*	*0.001*	
SL	0.440**	0.971***	0.618***	0.155**	-0.188***	88
	0.012	*0.000*	*0.000*	*0.046*	*0.000*	
H-L	-0.156**	-0.071***	-0.453***	-0.188**	0.107***	45
	0.012	*0.000*	*0.000*	*0.046*	*0.000*	
PH	-1.367	1.835	-0.119	0.178	0.486	20
	0.518	*0.276*	*0.920*	*0.877*	*0.725*	
PL	-2.583	3.382***	-1.078	-0.382	-0.689	72
	0.374	*0.002*	*0.268*	*0.441*	*0.194*	
H-L	1.216	-1.548***	0.959	0.560	1.175	16
	0.374	*0.002*	*0.268*	*0.441*	*0.194*	

This table shows the output of the *Carhart (1997) four-factor model* across industries. All companies in the sample (rated by ASSET4) were assigned into nine industries, such as Mining (M); Construction (C); Manufacturing (MA); Transportation&Public Utilities (T); Wholesale Trade (W); Retail Trade (R); Finance (F); Services (S); Public Administration (P). The suffix H means "High". The suffix L means "Low". α_i represents the returns of each portfolio, measured as %. $\beta_{1i}, \beta_{2i}, \beta_{3i}, \beta_{4i}$ are the coefficients of independent variables of the Carhart (1997) four-factor model. H-L represents the long-short strategy, calculated as the difference between the high and low portfolio for each sub-indicator. S&P500 is the market benchmark. ***, ** and * mean statistical significance at the 1 percent level, 5 percent level and 10 percent level, respectively. The *p*-value of *t*-Statistic is reported below each coefficient' estimate; *t*-Statistic was estimated based on Newey-West heteroskedasticity and autocorrelation adjusted standard errors. The sample period is 2003-2016, which totalizes 168 observations. Adjusted R^2 reported (in %).

The results in Table 5 suggest that high-rated portfolios that include stocks from specific industries, such as Manufacturing, Retail, Transportation, and Financial Services generate higher returns. However, our variable of interest (H-L) is only positive and significant in the case of Retail, displaying negative (and significant) signs in industries like Construction, Wholesale, and Services. Hence, results only support partially hypothesis 2.

Concluding Remarks

Social issues related to gender, race, education or other social aspect affects not only the contemporaneous society, but also investments' decisions. Thereby, more and more investors pretend to include socially responsible stocks in their portfolios and incorporate SRI screens in their investments (Kempf and Osthoff, 2007).

In this context, the purpose of this research is to evaluate the financial performance of socially high-rated investments relative to low-rated companies. According to this aim, we collect social ratings from the Asset4 database for a sample of U.S. companies and formed portfolios according to different social sub-indicators, such as Product Responsibility, Community, Human Rights, Diversity and Opportunity, Employment Quality, Health and Safety, Training and Development, and Social Indicator. Based on each sub-indicator, three types of portfolios were formed: 10% top and 10% bottom, which represents the 10% high-rated companies and the 10% low-rated companies, respectively; the difference between high- and low-rated is the portfolio of interest, which represents the long-short strategy. The sample covers the period from January of 2003 to December of 2016, which corresponds to 168 observations.

Following the previous literature, the portfolio performance was evaluated using an unconditional and a conditional framework based on the Carhart (1997) four-factor model and the Fama and French (2015) five-factor model. To conduct the alternative conditional framework, we also collected information about the economic cycle from the NBER.

Our results suggest that investors generate higher returns investing in companies with a high social score, and also, in companies with a low social score. So, we concluded that investors can contribute for a good social value and still generate higher returns by investing in the high-rated portfolio because the difference between high- and low-rated portfolios returns is not significant, which supports the "no effect" hypothesis (e.g. Statman and Glushkov, 2009). Our findings are consistent with various previous studies, namely Auer and Schuhmacher (2016) regarding the U.S. market, and also with other studies that focused on other markets, e.g., Renneboog *et al*. (2008), Revelli and Viviani (2015), Ayadi *et al*. (2016), and Leite *et al*. (2018), however using different research design. Overall, we provide update evidence testing the same hypothesis.

We also conducted an alternative conditional analysis of performance; our evidence suggests that, in general, the performance changes in recession periods (*versus* expansion periods). However, this analysis did not change our previous conclusion. This corroborates the findings of Nofsinger and Varma (2014) and also Becchetti *et al*. (2015), although the last authors focus on

examining the 2007 global financial crisis. Both studies used similar methodology: unconditional and conditional methodologies.

Furthermore, when applying the "best-in-class" screening process, the results provide evidence that Retail generates higher returns in the case of high-rated portfolios and in the case of the long-short strategy (high-low rated portfolios).

Despite our evidence, is worth to noting that sin stocks were ignored, as well as stocks of companies that were involved in at least one controversial business area, which means that although there are companies in our sample with a good social Asset4 score, that same company could be involved in some controversial business area, such as alcohol, tobacco, gambling, military, among others. Further research should focus on identifying which high-rated companies were formerly involved in controversial business areas.

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