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Investeringsstrategi: En anvendelse av Piotroskis FSCORE og EESG CSR ratings på LA4CTYUS-indeksen for å separere mellom vinnere og tapere

Investment Strategy: An Application of Piotroski's FSCORE and EESG CSR Ratings to the LA4CTYUS Index to Separate Winners from Losers

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Abbreviations

American Depositary Receipt - ADR

BM – Book-to-Market

EESG – Economic, Environmental, Social and Governmental

ESG – Environmental, Social and Governmental

CFO – Cash Flow from Operations

CFP – Corporate Financial Performance

CSP – Corporate Social/Environmental Performance

CSR – Corporate Social Responsibility

NASDAQ – NASDAQ Stock Exchange

NGO – Non Governmental Organisation

Non NASDAQ OTC – Non NASDAQ Over-The-Counter

NTNU – Norwegian University of Science and Technology

NYSE – New York Stock Exchange

NYSE MKT – New York Stock Exchange (Formerly AMEX)

ROA – Return on Assets

LA4CTYUS – U.S Asset 4 ESG index

TRCCR – Thomson Reuters Corporate Responsibility Ratings

ECNSCORE – Thomson Reuters Corporate Responsibility Ratings - Economic

ENVSCORE - Thomson Reuters Corporate Responsibility Ratings - Environmental

CGVSCORE - Thomson Reuters Corporate Responsibility Ratings - Governance

SOCSCORE - Thomson Reuters Corporate Responsibility Ratings – Social

1YR RET – One-year market return

2YR RET – Two-year market return

1YRMADJ – One-year market adjusted return

2YRMADJ – Two-year market adjusted return

Abstract

By applying Joseph D. Piotroski's FSCORE to the LA4CTYUS CSR index this paper attempts to achieve excess returns by shorting low FSCORE and longing high FSCORE firms. In addition, EESG ratings are added to the strategy to examine EESG ratings' contribution to the strategy. The strategy is applied to the LA4CTYUS CSR index as a whole, low book-to-market, middle book-to-market and high book-to-market segments.

For the LA4CTYUS CSR index low FSCORE firms yield significant negative returns of -24.0% and -27.6% for one-year market return and one-year market adjusted returns from 2002-2013. High FSCORE firms also yield significant positive returns of 15.0% and 5.7% respectively in the same period. The governmental csr variable range 31-40 shows returns of 15.9% and 7.6% for one-year returns and one-year market adjusted returns.

From the low book-to-market segment average EESG firms in the 0-10 range, the governmental csr score (31-40) and the environmental csr score (41-50) yields 45.8%, 28.2% and 26.0% one-year market returns and 29.6%, 17.4% and 12,6% one-year market adjusted returns.

In regards to the middle book-to-market segment aEESG (0-10)/aESG (0-10) and FSCORE (1) firms populate the losers bracket. Mid-range EESG variables fill the winners bracket.

Last, low FSCORE and ECNSCORE firms dominate the high book-to-market low score returns with significant negative returns of -54.3%, -48.8% for FSCORE one-year market return and one-year market adjusted return, and -16.4% and -16.3% for ECNSCORE respectively.

In terms of segment ranking the low bm yields on average 17.9% and 6.1%, middle bm 13.6% and 2.8%, the LA4CTYUS index 8.9% and 0.4%, and the high bm segment -5.0% and -8.0%

An investor can potentially earn high excess returns by shorting low FSCORE firms in the high book-to-market segment (-54.3% one-year market return) (-48.8% one-year market adjusted return) and longing average ESG/EESG firms in the 0-10 range, governmental csr firms (31-40) and environmental csr firms (41-50) (27.0% one-year market return) (14.5% one-year market adjusted returns), totalling 81.3% (one-year market returns) and 63.3% (one-year market adjusted returns). Adjusting for average segment returns the strategy yields 58.4% and 49.2% respectively.

1. Introduction

Joseph D. Piotroski find that focusing on high Book-to-Market firms and applying an accounting based approach yields investors excess returns (Piotroski, 2000). Since the millennium and the aftermath of the Enron scandal corporations promote a more responsible business concept. Corporate Social Responsibility (CSR) firms cater to the needs of the stakeholders rather than stockholders and focus on aspects such as environmental damage reduction, gender-equality and transparency to build trust and positive associations to brand and business. In the financial world, Thompson Reuters introduces an index where non-financial data is included. The Asset 4 ESG index collects information regarding a firm's performance within three categories; Environmental, Social and Government as well as Economic. By examining the Asset 4 ESG index this paper seeks to apply Piotroski's FSCORE and investigate a similar buy-and-hold strategy based on the four categories; economic, environmental, governmental and social csr scores to achieve higher rates of return and separate winners from losers.

2. Literature Review and Limitations

This paper examines an investment strategy based on the strategy of Piotroski's FSCORE in comparison to a Corporate Social Responsibility (CSR) focused approach. Based on the findings by Orlitzky, et al. the contribution of CSR ratings to return rates is assessed.

Piotroski focuses on financially distressed firms, known as high book-to-market firms. By applying the FSCORE to the high bm portfolio he seeks to use the nine binary signals to long (short) high (low) FSCORE firms to achieve abnormal/excess returns. (Piotroski, 2000) By applying the FSCORE approach to a portfolio consisting of high, low, and negative book-to-market firms I examine whether Piotroski's FSCORE variables are applicable to a broader portfolio. By examining the LA4CTYUS index and low-, middle-, and large bm segments this paper focus solely on rates of return, excluding firm size portfolios and regression functions. Other variables such as, but not exclusively momentum and sensitivity tests are excluded. Furthermore, the paper does not take into account transaction costs and expects the investor to hold available investment capital when longing stocks.

3. Selection of Variables

3.1. FSCORE Variable

Piotroski's (2000) FSCORE composite consists of nine binary variables with focus on a firm's financial condition: profitability, financial leverage/liquidity, and operating efficiency (Piotroski, 2000). The following definitions of FSCORE variables and their descriptions come from *Value Investing: The Use of Historical Financial Statement Information to Separate Winners from Losers* by Joseph D. Piotroski.

3.1.1. Financial Performance Signals: Profitability

The profitability variables focus on the internal aspect of the distressed firm, profit, and positive cash flow realisation. A positive shift signals performance improvement.

The four variables used to assess a firm's profitability are return on assets (F1 ROA), cash flow from operations (F2 CFO), change in return on assets (F3 cROA) and ACCRUAL.

> F1 ROA equals 1(0) if income before extraordinary items is positive (negative)
>
> F2 CFO equals 1(0) if cash flow from operations[1] is positive (negative)
>
> F3 cROA equals 1(0) if current year's ROA less prior year's ROA is positive (negative)
>
> F4 ACCRUALS equals 1(0) if CFO less current year's ROA is positive (negative)

3.1.2. Financial Performance Signals: Leverage, Liquidity, and Source of Funds

Three variables measure changes in a firm's capital structure and its ability to meet future debt obligations. F5 cLEVER assesses changes in long-term debt levels. Second, F6 cLIQUID determines the firm's current assets to current liability at fiscal year-end between current and prior year. Lastly, F7 EQ registers if a firm did not issue common equity in the year subsequent portfolio formation. A positive (negative) change in the variables are expected to result in reduced (additional) financial constraints to the already distressed firms.

> F5 cLEVER equals 1 (0) if the leverage ratio decrease (increase)
>
> F6 cLIQUID equals 1 (0) if liquidity is improved[2] (negative)
>
> F7 EQ equals 1 (0) if the firm did not issue common equity, otherwise (0)

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[1] F_ROA and F_CFO variables scaled by beginning-of-the-year total assets

[2] F_ΔLIQUID measures current ratio (assets to current liabilities at fiscal year-end) between current and prior year. The current liabilities component (LCT) excludes banks.

3.1.3. Financial Performance Signals: Operating Efficiency

The two remaining variables assess changes in a firm's operations. The cMARGIN[3] and cTURN ratios reflect two key constructs underlying decomposition of ROA (Piotroski, 2000). An improvement in margin can be the result of improved factor costs, reduced inventory costs, or an increase in price. A positive shift in cTURN[4] signals improved productivity from the asset base, more efficient operations or an increase in sales.

> F8 cMARGIN equals 1 (0) if the change in gross margin ratio is positive (negative)
> F9 cTURN equals 1 (0) if the change in turnover ratio is positive (negative)

The aggregate FSCORE measures the overall quality of the firm's financial position, where firms with high (low) FSCOREs 8-9 (1-2) are longed (shorted) when applied to high bm firms. In addition to Piotroski's high bm segment I further assess the other groups of FSCORE firms (index, low- and middle bm). Each year I calculate the FSCORE of all firms and remove companies were sufficient information is unavailable.

3.2. Corporate Social/Financial Performance/Responsibility Variable

Regarding the corporate social/financial performance variables business scholars have reached conclusions both supporting and rejecting the relationship. Orlitzky et Al.s Meta-analysis on the topic find corporate social/environment performance (CSP) to be more highly correlated with accounting-based measures of corporate financial performance (CFP) than with market-based indicators. Further CSP reputation indices are more highly correlated with CFP than are other indicators of CSP (Orlitzky, et al., 2003).

The CSP variable was measured through quantitative and qualitative strategies involving CSP disclosures, CSP reputation ratings, social audits and managerial CSP principles and values.

I use *Thomson Reuters Corporate Responsibility Ratings (TRCRR)* for data regarding the following CSR categories; Economic, Environmental, Governance and Social. Thomson Reuters collect data from over 500 different data points from various sources, such as company reports, company filings, company websites, NGO websites, CSR reports and established and reputable media outlets (Thomson Reuters, 2013). Ratings are a result of 226 Key Performance Indicators (KPIs) based on 500+ data points. Environmental Ratings are derived from 70 KPIs, Social Ratings from 88 KPIs and Governance Ratings from 68 KPIs as of 2013.

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[3] current gross margin ratio (gross margin scaled by total sales) less the prior year's gross margin ratio
[4] current year asset turnover ratio (total sales scaled by beginning-of-the-year total assets) less the prior year's asset turnover ratio.

3.2.1. Thomson Reuters Corporate Responsibility Ratings (TRCRR)

The data collected is qualitative exclusively to increase objectiveness and meaningfulness. Market scores are calculated for each company with at least one reported KPI in a given year between 0 and 1. The scores are normalised and adjusted for skewness and fitted to a bell curve in ratings between 0 and 100 for each company. Last, percentile ranks are calculated for each company. For that reason, medians and means are engineered to be «reasonably» close to 50. (Thomson Reuters, 2013) The following definitions come from *Thomson Reuters Corporate Responsibility Ratings (TRCRR)*:

3.3. Corporate Social Responsibility: Economic

Although excluded from the TRCRR document the Corporate Social Responsibility Economic score is retrievable from Datastream in addition to the CSR scores. The score measures a firm's capability to generate sustainable growth and high return on investment through efficient use of its resources. The Economic pillar focuses on margins/performance, profitability/shareholder loyalty and revenue/client loyalty. (Thomson Reuters, 2013)

3.4. Corporate Social Responsibility: Environmental

First, the Corporate Social Responsibility Environmental score is computed from 70 KPIs focusing on emission usage/reduction, product/process innovation, environmental activism/initiative and resource usage/reduction. (Thomson Reuters, 2013)

The emission reduction pillar focuses on emission reduction policy, biodiversity controversies and impact, total, direct and indirect C02 equivalents emissions and reduction, commercial risks, Ozone-depleting substances (ODS) reduction, F-gases, NOx (Nitrogen Oxide), SOx (Sulphur Oxide) and VOC (Volatile Organic Compounds) emissions and reduction. In addition, hazardous and non-hazardous waste, recycling ratio, waste pollution and reduction initiatives, environmental management system certification, sustainable transportation and environmental expenditures comprise the emission component of the pillar consisting of 28 KPIs.

The resource reduction component includes 17 KPIs concentrating on energy efficiency. Total direct and indirect energy consumption is measured in gigajoules, and specific values for production and purchase of direct energy, in addition to coal, natural gas, and oil energy. Electricity consumption and production as well as renewable energy, green buildings, water efficiency and water usage and recycling (measured in cubic meters) and the usage of

environmental friendly supplier through environmental initiatives such as ISO 14000 – environmental management.

Last, the product innovation pillar comprises of 25 KPIs focusing on energy footprint reduction, eco-design, animal testing, GMO usage, hybrid vehicles, labelled wood, noise reduction, organic products, environmental R&D expenditures, renewable/clean energy products, water technologies and product innovation/impact mimization.

3.5. Corporate Social Responsibility: Governance

Second, the Corporate Social Responsibility Governance score consists of 68 KPIs which examines factors such as board structure, compensation policy, board functions, financial and operational transparency, shareholder rights and vision and strategy. (Thomson Reuters, 2013) Board functions consist of 15 KPIs including policy, implementation, monitoring and improvements. In addition, audit committees independence, management and expertise is assessed. Compensation and nomination process regarding the committee is evaluated as well as board meetings and attendance.

Board structure includes 17 KPIs focusing on policy, implementation, monitoring and improvements of the board. Other variables are size of board, background and skills, diversity, experience and term duration. The relationship between board members and their position (external/internal) is assessed.

Compensation policy KPIs total 13 including policy, implementation, monitoring and improvements of the compensation policy. Individual compensation, remuneration packages and board member compensation are evaluated, as well as stock option programmes, stock compensation, long term objectives, sustainability incentives and controversies regarding the compensation policy are considered.

3.6. Corporate Social Responsibility: Social

Last, The Corporate Social Responsibility Social score comprises of 88 KPIs covering employment quality, health and safety issues, training, diversity, human rights, community involvement and product responsibility. (Thomson Reuters, 2013) The effective tax rate is included as an individual KPI.

Region specific KPIs total 41 KPIs and focus on community, diversity and opportunity and employment quality. The community pillar includes 14 KPIs focuses on bribery, corruption and fraud controversies, business ethics compliance, corporate responsibility awards, crisis management, indigenous people controversies, diseases in developing countries, donations (in general), implementation, improvements, monitoring, policy, patent infringement, public health controversies and total donations.

Diversity and opportunity comprise of compliance, controversies, family friendliness, implementation, improvements, equal opportunities, female-male-ratio in management, monitoring and work-life-balance.

Employment quality touches on announced lay-offs, bonus plans, employment awards, generous fringe benefits, implementation, improvements, key management departures, monitoring, net employment creation, personnel turnover, policy, salaries, salary distribution, salary gap, strikes, trade union representatives and wages or working condition controversies. Industry specific KPIs sum 38 KPIs and focus on product responsibility, health & safety, and training and development.

Product responsibility KPIs count 19 and includes policy, implementation, monitoring and improving product responsibility. Further variables are quality management, product access, technology know-how sharing, social labels, sustainable consumption, clinical trials and research guidelines, retailing responsibility, social exclusion controversies, responsible marketing controversies, responsible asset management, customer controversies, product compliance, FDA warning letters, drug delay and product recalls/with markets.

Health & safety total nine KPIs focusing on policy, implementation, monitoring and improving health and safety. In addition, injuries, lost days, HIV-AIDS program and controversies and compliances regarding health and safety are assessed.

Training and development comprise of policy, implementation, monitoring and improvements of training and development initiatives. Other indicators are training hours, training costs, internal promotion, management training, university partnerships, and supplier ESG training. Universal KPIs is the last sub group to the corporate responsibility social score pillar. The group consists of nine performance indicators focusing on policy, implementation, monitoring and

improvements of human rights initiatives. Furthermore, suppliers social impact and diversity and opportunity policy. In addition, controversies regarding freedom of association, child labour and human rights are included.

4. Research Design

4.1. Sample and Data Description

By using *Datastream* I collect U.S ESG Asset 4 (LA4CTYUS) CSR scores from 2002 to 2013. The list consists of 994 companies, 11 867 firm years from 2002-2013. The Asset 4 ESG portfolio is heavily populated by equities, with a handful of American Depositary Receipts (ADR) and Closed-End Funds (CEF). The majority trade on NYSE and NASDAQ, minority on Non NASDAQ OTC and NYSE MKT. Regarding the history listed on their respective exchange the average firm has been trading for 25 years while the mode is 43 years.

Table 1: Distribution of Firms by Firm Age
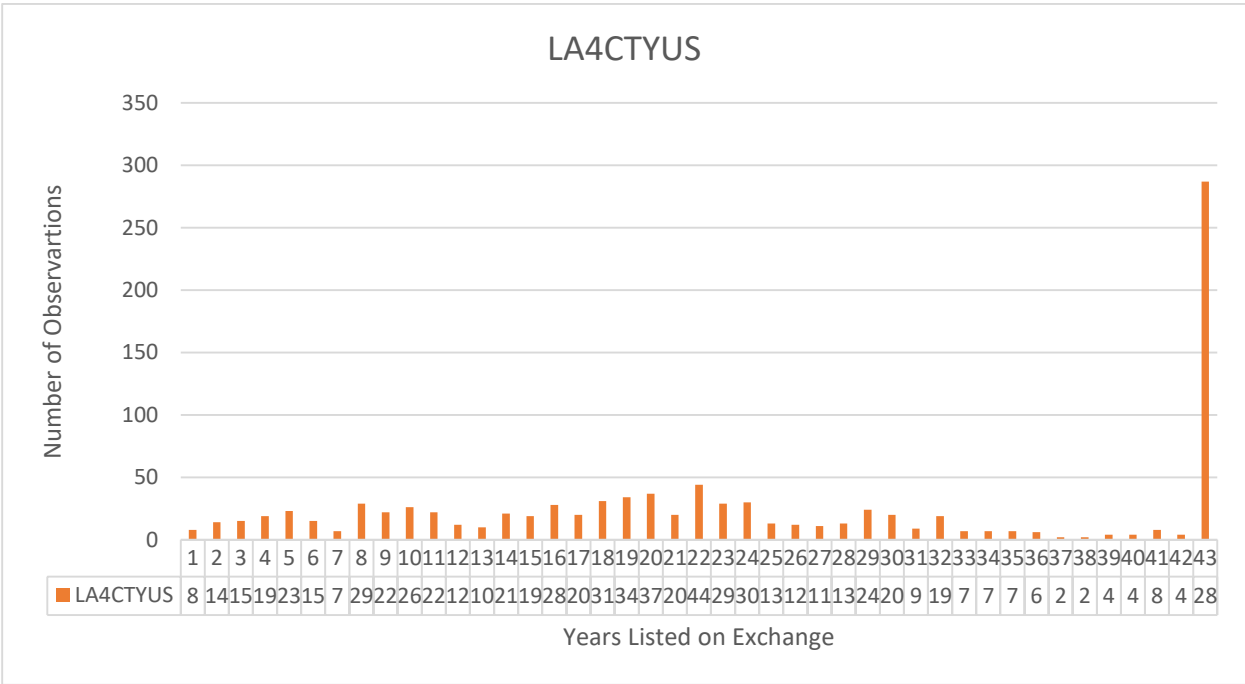
Economic (ECNSCORE), Environmental (ENVSCORE), Governance (CGVSCORE) and Social (SOCSCORE) scores are collected for each firm on a yearly basis. One and two year return rates[5] are calculated for each company applying a ln transformation[6] to the LA4CTYUS return index (RI). Actively trading companies are in focus.

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[5] One- and two- year return rates are calculated to the 1st of each month. The buy-and-hold strategy initiates five months after fiscal year-end for each company. Dividends are re-invested.

[6] $Return = \ln(\frac{ri_t}{ri_{t-1}})$

I collect annual data and balance sheet information required to calculate the FSCORE component on *Research Insight* in addition to market value of equity and Book-to-Market-ratio at fiscal year-end.

Each year I rank and assign companies to portfolios based on book-to-market ratio[7] and market value of equity[8]. Prior year's Book-to-Market-ratios and MVE percentiles are used to assign current year's portfolios to eliminate peek ahead bias (Piotroski, 2000)

4.2. Data Reduction

The list of companies is reduced from 994 to 988 as respective firm information proved unavailable on *Research Insight*. First, I remove firms that miss 1 and Two-Year return rates reducing the total sample from 11,856 to 10,366. Companies that lack information to compute bm-ratio are excluded further reducing the sample to 10,234. I exclude firms where one of the FSCORE variables results in an error due to lack of information. F1 Return on Assets reduces the sample size to 10,229. F2 Cash Flow from Operations excludes an additional 485 firms from the final sample. F3 change in Return on Assets reduces the sample to 9,730, while F4 ACCRUAL errors or missing values are corrected through F1 and F2. F5 Leverage decreases the sample size to 9,715 while F6 Liquidity moderates the sample to 8,202. F7 Equity corrections give a sample of 8,179, F8 change in Gross Profit Margin-ratio reduces the sample to 8,172 and F9 change in Turnover corrections show no errors or missing values. After correcting for missing values or errors in the aggregated FSCORE the final sample consists of 8,170 firms. ESG scores of zero are recoded into missing value and excluded as *Datastream* returns the value zero for "missing value". The final sample totals 6,264 firm years from 2002-2013. While the original portfolio included ADRs and CEFs the final sample is populated exclusively by equities.

4.3. Calculation of Returns

Returns are calculated in two primary categories; Market- and market adjusted- returns. For each firm one and two year buy and hold Market returns are calculated starting from the fifth month after fiscal year end. Compounding ends 12 or 24 months after the strategy is initiated. If a company delists the expected rate of return is zero. One and two year buy and hold market

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[7] Book-to-Market-ratio: Each year companies are assigned to a low (percentile 0-33), middle (percentile 33-66) or high (percentile 66-100) group. Prior year's distribution is applied to current year to reduce peek ahead bias. Due to the lack of CSR scores 2002 distribution is based on 2001 financial- and FSCORE-data.

[8] MVE: Each year companies are assigned to a small (percentile 0-33), medium (percentile 33-66) or large (percentile 66-100) group. Prior year's distribution is applied to current year to reduce peek ahead bias. Due to the lack of CSR scores 2002 distribution is based on 2001 financial- and FSCORE-data.

adjusted returns are calculated for each firm less the value weighted market index return for the same period[9]. Similar to Market return rates compounding starts five months after fiscal year end and ends 12 or 24 months after initiation.

4.4. Empirical Methodology

The primary methodology of the paper is to form portfolios based on Piotroski's FSCORE or CSRSCORES to earn excess returns. Firms with low FSCORES (1 or 2) are shorted and high FSCORES (8 or 9) are longed. Similarly, low CSR scores (0-20) are shorted and high CSR scores (80-100) longed. The strategy is applied to the LA4CTYUS index, portfolios based on book-to-market-ratio and market value of equity[10].

High FSCORE firm returns are compared to low FSCORE firm returns and high FSCORE firm returns against the complete portfolio it relates to. Resampling is conducted in the following way: Regarding the portfolio in question firms are randomly assigned, without replacement to prevent a firm observation from being sampled more than once, to pseudo high- or low-portfolios responding to the same number of firms in the actual portfolio. Differences in the means are calculated for the two portfolios and the process is repeated 1,000 times to represent an observation under the null of lower/higher returns.

Pseudo low portfolios are compared to their empirical counterparts. The null hypothesis expects pseudo low portfolios to show equal or higher returns than FSCORE, ECNSCORE, ENVSCORE, CGVSCORE, SOCSCORE, aESG and aEESG portfolios. The alternative hypothesis expects pseudo low portfolios to underperform[11] low FSCORE, ECNSCORE, ENVSCORE, CGVSCORE, SOCSCORE, aESG and aEESG portfolios. If the pseudo low portfolios show equal or higher returns than the empirical low portfolios in 50 or more instances, the alternative hypothesis is rejected.

Similarly, pseudo high portfolios are compared to empirical high values. The null hypothesis expects pseudo high portfolios to show equal or higher returns than FSCORE, ECNSCORE,

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[9] For fiscal year 2002 Book-to-Market- and MVE-distributions were calculated from 2001 FSCORE-data with no CSRSCORES as CSR data collection starts 2002.

[10] For each year, a firm is required to provide the following information: 12 and 24 months' market and market-adjusted returns, market value of equity, Book-to-Market-ratio, FSCORE and CSRSCORE.

[11] Underperformance in regard to low ECNSCORE, ENVSCORE, CGVSCORE, SOCSCORE, aESG and aEESG portfolios refers to the number of pseudo portfolios (of 1,000) showing values **equal or higher** than empirical portfolios.

ENVSCORE, CGVSCORE, SOCSCORE, aESG and aEESG portfolios. The alternative hypothesis expects pseudo high portfolios to underperform[12] high FSCORE, ECNSCORE, ENVSCORE, CGVSCORE, SOCSCORE, aESG and aEESG portfolios. If the pseudo high portfolios show higher returns than the empirical high portfolios in 50 or more instances, the alternative hypothesis is rejected.

Pseudo high-low portfolios are compared to empirical high-low portfolios. The null hypothesis expects pseudo high-low portfolios to show equal or lower returns than empirical high-low FSCORE, ECNSCORE, ENVSCORE, CGVSCORE, SOCSCORE, aESG and aEESG portfolios. The alternative hypothesis expects pseudo high-low portfolios to underperform[13] high-low FSCORE, ECNSCORE, ENVSCORE, CGVSCORE, SOCSCORE, aESG and aEESG portfolios. If the pseudo high-low portfolios show higher returns than the empirical high-low portfolios in 50 or more instances, the alternative hypothesis is rejected.

Pseudo high-all portfolios are compared to empirical high-all portfolios. The null hypothesis expects pseudo high-all portfolios to show equal or lower returns than empirical high-all FSCORE, ECNSCORE, ENVSCORE, CGVSCORE, SOCSCORE, aESG and aEESG portfolios. The alternative hypothesis expects pseudo high-all portfolios to underperform[14] high-all FSCORE, ECNSCORE, ENVSCORE, CGVSCORE, SOCSCORE, aESG and aEESG portfolios. If the pseudo high-all portfolios show higher returns than the empirical high-all portfolios in 50 or more instances, the alternative hypothesis is rejected.

Pseudo high-index portfolios are compared to empirical high-index portfolios. The null hypothesis expects pseudo high-index portfolios to show equal or lower returns than empirical high-indexes FSCORE, ECNSCORE, ENVSCORE, CGVSCORE, SOCSCORE, aESG and aEESG portfolios. The alternative hypothesis expects pseudo high-index portfolios to

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[12] Underperformance in regard to high ECNSCORE, ENVSCORE, CGVSCORE, SOCSCORE, aESG and aEESG portfolios refers to the number of pseudo portfolios (of 1,000) showing values **equal or lower** than empirical portfolios.

[13] Underperformance in regard to high-low ECNSCORE, ENVSCORE, CGVSCORE, SOCSCORE, aESG and aEESG portfolios refers to the number of pseudo portfolios (of 1,000) showing values **lower** than empirical portfolios.

[14] Underperformance in regard to high-all ECNSCORE, ENVSCORE, CGVSCORE, SOCSCORE, aESG and aEESG portfolios refers to the number of pseudo portfolios (of 1,000) showing values **lower** than empirical portfolios.

underperform[15] high-all FSCORE, ECNSCORE, ENVSCORE, CGVSCORE, SOCSCORE, aESG and aEESG portfolios. If the pseudo high-all portfolios show higher returns than the empirical high-all portfolios in 50 or more instances, the alternative hypothesis is rejected.

 The empirical distribution in return differences is used to test the statistical significance of the actual observed return differences (Piotroski, 2000). Means, medians, 5th percentile, 25th percentile, 75th percentile and 95th percentile are calculated for the pseudo portfolios.

In the following chapter, the empirical results for the LA4CTYUS index, low-, middle-, and high-bm segments are examined.

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[15] Underperformance in regard to high-all ECNSCORE, ENVSCORE, CGVSCORE, SOCSCORE, aESG and aEESG portfolios refers to the number of pseudo portfolios (of 1,000) showing values **lower** than empirical portfolios.

5. Empirical Results

5.1. Empirical Results: LA4CTYUS Index

Table 2: Financial Characteristics: LA4CTYUS Index (6,264)

Variable	Mean	Median	Standard Deviation	Proportion with Positive Signal
MVE[16]	17177.649	6315.719	35808.914	1.000
TA[17]	15240.798	6165.864	27448.717	1.000
BM-ratio[18]	0.456	0.381	0.456	0.976
F1 ROA[19]	0.069	0.065	0.108	0.892
F2 CFO[20]	0.114	0.108	0.112	0.945
F3 cROA[21]	0.001	0.001	0.109	0.524
F4 ACC[22]	0.044	0.038	0.030	1.000
F5 cLEV[23]	0.003	-0.001	0.091	0.396
F6 cLIQ[24]	-0.012	0.008	1.124	0.513
F7 EQ[25]	0.786	0.203	82.129	0.535
F8 cMAR[26]	1.406	0.113	90.534	0.529
F9 cTURN[27]	-0.021	-0.001	0.269	0.492
ECNSCORE	55.318	57.005	27.942	1.000
ENVSCORE	45.445	34.865	31.560	1.000
CGVSCORE	74.094	77.800	16.885	1.000
SOCSCORE	48.589	45.250	28.527	1.000
Average EESG	55.861	52.565	21.663	1.000
Average ESG	56.043	51.802	22.476	1.000

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[16] MVE: market value of equity at fiscal year-end in millions of dollars. Market value is calculated as the number of shares outstanding at fiscal year-end times closing share price.

[17] ASSETS: total assets in millions of dollars reported at the end of fiscal year *t*.

[18] Book-to-Market: book value of equity at fiscal year-end, scaled by MVE.

[19] ROA: income before extraordinary items for the fiscal year *t*, scaled by total assets at the beginning of the year *t-1*.

[20] CFO: cash flow from operations scaled by total assets at the beginning of the year.

[21] cROA: change in annual ROA. cROA is calculated as ROA for year *t* less the firm's ROA for year *t-1*.

[22] ACCRUAL: income before extraordinary items less cash flow from operations, scaled by total assets at the beginning of year *t*.

[23] cLEV: change in the firm's debt-to-asset ratio between the end of year *t* and year *t-1*. The debt-to-asset ratio is defined as the firm's total long-term debt, including long-term debt classified as current, scaled by average total assets.

[24] cLIQ: change in the firm's current ratio between the end of year *t* and year *t-1*. Current ratio is defined as current assets divided by total current liabilities.

[25] EQ: number of common shares outstanding for year *t*.

[26] cMAR: gross margin (net sales less cost of goods sold) scaled by net sales for year *t*, less the firm's gross margin (scaled by net sales) from year *t-1*.

[27] cTURN: change in the firm's asset turnover ratio between the end of year *t* and year *t-1*. Asset turnover is defined as net sales scaled by average total assets for year *t*.

The average firm in the CSR index has a market value of equity of 17,178 million USD, while the median is 6,316 million USD and the standard deviation 35,809 million USD. The high standard deviation signals a large spread in firm size, negatively skewed, given the proportional signal of 1.000. Total assets average 15,241 million USD, with a median of 6,166 million USD and a standard deviation of 27,449 million USD. Again, with a proportional signal of 1.000, the distribution is expected to be negatively skewed. Different from Piotroski's high book-to-market portfolio, this paper examines the FSCORE's ability to separate winners from losers assessing the index at first. Average bm-ratio is 0.456, median 0.381 and standard deviation 0.456. F1 Return on assets average at 0.069, F2 CFO 0.114 and F3 cROA 0.001. Interestingly all firms are able to deliver positive F4 accruals in the 2002-2013 time frame. As this is true for the index, this is also true for all portfolios derived from the index. F5 cLEV average 0.003, F6 cLIQ -0.012, F7 EQ 0.786, F8 cMAR 1.406 and F9 cTURN -0.021.

The average LA4CTYUS firm achieves the following EESG scores; ECNSCORE 55.32, EVNSCORE 45.45, CGVSCORE 74.09 and SOCSCORE of 48.59. The average EESG score is 55.86 and average ESG 56.04.

Next, Spearman's rho correlations for the LA4CTYUS index is examined.

	F1 ROA	F2 CFO	F3 cROA	F4 ACC	F5 cLEV	F6 cLIQ	F7 EQ	F8 cMAR	F9 cTURN	FSCORE
1YR RET	.081**	.100**	.156**		.078**	.040**	-.128**	.152**	.043**	.141**
2YR RET	.044**	.065**	.089**		.057**	.053**	-.104**	.105**	-.014	.075**
1YRMADJ	.090**	.089**	.153**		.072**	.042**	-.090**	.122**	.067**	.150**
2YRMADJ	.059**	.057**	.103**		.046**	.042**	-.059**	.081**	.036**	.100**
F1 ROA	1.000	.691**	.169**		.110**	.060**	.143**	.110**	.044**	.446**
F2 CFO		1.000	.143**		.086**	.046**	.102**	.095**	.050**	.366**
F3 cROA			1.000		.023	.022	-.020	.260**	.406**	.654**
F4 ACC										
F5 cLEV					1.000	-.120**	-.047**	.041**	-.099**	.287**
F6 cLIQ						1.000	-.068**	.028*	-.059**	.286**
F7 EQ							1.000	-.043**	-.021	.302**
F8 cMAR								1.000	.032*	.486**
F9 cTURN									1.000	.456**
FSCORE										1.000
ECNSCORE										
ENVSCORE										
CGVSCORE										
SOCSCORE										
Average EESG										
Average ESG										

Table 3: Spearman's rho Correlations: All Firms (6,264 Firm Years between 2002-2013)

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 3 - continued						
	ECNSCORE	ENVSCORE	CGVSCORE	SOCSCORE	Average EESG	Average ESG
1YR RET	.038**	.000	-.030*	-.016	.003	-.015
2YR RET	.012	.010	-.035**	-.014	-.005	-.014
1YRMADJ	.036**	-.014	-.020	-.033**	-.011	-.031*
2YRMADJ	.015	-.007	-.025*	-.025*	-.013	-.027*
F1 ROA	.331**	.080**	.050**	.113**	.189**	.098**
F2 CFO	.261**	.068**	.038**	.084**	.151**	.077**
F3 cROA	.104**	.000	-.015	-.008	.028*	-.009
F4 ACC						
F5 cLEV	.040**	-.057**	-.055**	-.045**	-.031*	-.061**
F6 cLIQ	.052**	.026*	.015	.020	.034**	.024
F7 EQ	.146**	.103**	.084**	.167**	.158**	.145**
F8 cMAR	.045**	.000	-.016	-.019	.005	-.016
F9 cTURN	.039**	-.011	.000	-.017	.004	-.012
FSCORE	.226**	.041**	.019	.062**	.115**	.050**
ECNSCORE	1.000	.498**	.405**	.605**	.782**	.583**
ENVSCORE		1.000	.580**	.756**	.858**	.901**
CGVSCORE			1.000	.565**	.704**	.754**
SOCSCORE				1.000	.898**	.912**
Average EESG					1.000	.958**
Average ESG						1.000
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

5.1.1. LA4CTYUS Index: Spearman's rho Correlations

By conducting a Spearman rho correlation of the   index, and later portfolios based on book-to-market-ratio and market value of equity, the impact of each variable is examined.

The FSCORE variable performs a low, but positive correlation of 0.141 and 0.150 with one-year and one-year market adjusted returns respectively. However, ranking third, beaten by F8 change in margins (rank 2) and F3 change in return on assets (rank 1). F8 achieves a correlation of 0.152 and 0.122 to one-year returns and one-year market adjusted returns, while F3 does 0.156 and 0.153 respectively. The majority of the FSCORE variables with the exception of F4 Accrual and F9 change in Turnover show low, but significant correlations with one-year market returns and one-year market adjusted returns. Correlations are lower for two-year market returns and two-year market adjusted returns. F7 equity shows a negative correlation to market and market adjusted returns.

The ESG variables including the ECNSCORE variable show low and insignificant correlations to returns. The economic variable is the best performing variable with a positive correlation of 0.038 and 0.036 to one-year market returns and one-year market adjusted return rates. The governmental variable is the best performing ESG variable with correlations of -0.030 one-year market return and -0.020 one-year market adjusted return. Second, the social variable performs -0.016 and -0.033 and third, the environmental variable shows 0.000 and -0.14. Combining the environmental, social and governmental variables the average ESG correlation is -0.015 for one-year market returns and -0.031 for one-year market adjusted return rates.

The insignificant correlations in regard to return rates raise scepticism towards the ESG variables and their ability to produce excess returns. It appears the ESG variables consistently do not significantly impact return rates, while the economic variable may show better results. The following chapter examines a buy-and-hold strategy longing high FSCORE (8-9) firms or EESG (81-100) firms and shorting low FSCORE (1-2) or EESG (0-20) firms.

One-Year Market Returns[28]	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.089	-0.579	-0.078	0.129	0.296	0.616	0.671	6,264
FSCORE								
0	-	-	-	-	-	-	-	0
1	-0.147	-1.331	-0.626	-0.042	0.260	1.165	0.464	28
2	-0.268	-1.423	-0.759	-0.267	0.232	0.918	0.394	94
3	-0.056	-1.137	-0.336	-0.032	0.298	0.749	0.460	235
4	0.009	-0.733	-0.222	0.059	0.253	0.641	0.580	590
5	0.072	-0.569	-0.106	0.107	0.272	0.583	0.648	1,307
6	0.092	-0.522	-0.063	0.131	0.288	0.558	0.679	1,594
7	0.146	-0.378	-0.025	0.159	0.320	0.628	0.719	1,473
8	0.154	-0.395	0.004	0.172	0.320	0.620	0.760	811
9	0.131	-0.379	0.004	0.176	0.296	0.628	0.750	132
Low Score (1-2)	-0.240	-1.402	-0.729	-0.215	0.238	0.974	0.410	122
High Score (8-9)	0.150	-0.392	0.004	0.173	0.316	0.621	0.758	943
High-Low[29]	0.391	1.010	0.732	0.388	0.078	-0.354		1,065
High-All[30]	0.061	0.187	0.082	0.044	0.020	0.005		

Resampling Result FSCORE	Mean	5%	25%	Median	75%	95%
Pseudo Low Mean[31]	0.091	-0.553	-0.076	0.129	0.298	0.608
Pseudo Low[32]	0	0	0	0	19	1000
(p-Value)[33]	0.000	0.000	0.000	0.000	0.019	1.000
Pseudo High Mean	0.089	-0.575	-0.078	0.128	0.296	0.615
Pseudo High	0	0	0	0	34	446
(p-Value)	0.000	0.000	0.000	0.000	0.034	0.446
Pseudo High-Low Mean	-0.002	-0.022	-0.002	-0.001	-0.002	0.007
Pseudo High-Low	0	0	0	0	4	999
(p-Value)	0.000	0.000	0.000	0.000	0.004	0.999
Pseudo High-All Mean	0.000	0.005	0.001	-0.001	0.000	-0.002
Pseudo High-All	0	0	0	0	34	446
(p-Value)	0.000	0.000	0.000	0.000	0.034	0.446

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[28] One-Year Market Returns: 12 month buy and hold return of the firm from five months after fiscal year end.

[29] High–Low Mean: 0.150- (-0,240) = 0.391

[30] High-All Mean: 0.150 – 0.089 = 0.061

[31] Pseudo Low Mean: Mean of 122 random selected firms without replacement from total sample of 6,264 observations

[32] Number of pseudo observations achieving a mean equal or lower than the empirical low score (-0.240) of 1,000

[33] Representing the p-value the pseudo low observations are divided by 1,000. The null hypothesis is rejected if the p-value is 0.05 or above.

Table 4b: FSCORE All Firms (6,264)

One-Year Market Adjusted Returns[34]	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.004	-0.511	-0.148	0.014	0.173	0.481	0.524	6,264
FSCORE								
0	-	-	-	-	-	-		0
1	-0.251	-1.324	-0.752	-0.193	0.132	0.965	0.286	28
2	-0.284	-1.338	-0.683	-0.305	0.068	0.756	0.298	94
3	-0.113	-0.995	-0.335	-0.097	0.189	0.551	0.391	235
4	-0.062	-0.686	-0.237	-0.035	0.134	0.487	0.424	590
5	-0.022	-0.479	-0.174	-0.010	0.143	0.408	0.488	1,307
6	0.012	-0.469	-0.132	0.024	0.166	0.451	0.537	1,594
7	0.051	-0.387	-0.119	0.042	0.211	0.512	0.579	1,473
8	0.057	-0.362	-0.081	0.045	0.198	0.524	0.591	811
9	0.055	-0.339	-0.095	0.053	0.202	0.467	0.591	132
Low Score (1-2)	-0.276	-1.335	-0.699	-0.280	0.083	0.804	0.295	122
High Score (8-9)	0.057	-0.359	-0.083	0.046	0.199	0.516	0.591	943
High-Low	0.333	0.976	0.616	0.326	0.116	-0.288		1,065
High-All	0.054	0.152	0.065	0.032	0.026	0.035		

Resampling Result FSCORE	Mean	5%	25%	Median	75%	95%
Pseudo Low Mean	0.003	-0.492	-0.148	0.013	0.171	0.464
Pseudo Low	0	0	0	0	1	1000
(p-Value)	0.000	0.000	0.000	0.000	0.001	1.000
Pseudo High Mean	0.004	-0.506	-0.147	0.014	0.173	0.481
Pseudo High	0	0	0	0	6	88
(p-Value)	0.000	0.000	0.000	0.000	0.006	0.088
Pseudo High-Low Mean	0.001	-0.015	0.001	0.001	0.001	0.017
Pseudo High-Low	0	0	0	0	0	1000
(p-Value)	0.000	0.000	0.000	0.000	0.000	1.000
Pseudo High-All Mean	0.000	0.005	0.001	0.001	0.000	0.000
Pseudo High-All	0	0	0	0	6	88
(p-Value)	0.000	0.000	0.000	0.000	0.006	0.088

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[34] One-Year Market Adjusted Returns: 12 month buy and hold return of the firm from five months after fiscal year end less the buy and hold return of the value weighted market index over the same period. If a firm delists the return is considered zero.

Table 4c: FSCORE All Firms (6,264)

Two-Year Market Returns[35]	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.188	-0.637	-0.046	0.224	0.467	0.895	0.719	6,264
FSCORE								
0	-	-	-	-	-	-	-	0
1	0.059	-1.000	-0.521	0.013	0.594	1.480	0.500	28
2	-0.101	-1.682	-0.562	-0.022	0.326	1.253	0.500	94
3	0.039	-1.074	-0.291	0.092	0.485	0.977	0.566	235
4	0.140	-0.851	-0.097	0.195	0.476	0.939	0.686	590
5	0.181	-0.610	-0.053	0.212	0.450	0.873	0.714	1,307
6	0.190	-0.593	-0.034	0.237	0.458	0.826	0.731	1,594
7	0.220	-0.526	-0.016	0.249	0.478	0.916	0.737	1,473
8	0.247	-0.446	0.017	0.245	0.495	0.905	0.767	811
9	0.215	-0.600	-0.025	0.232	0.493	0.849	0.727	132
Low Score (1-2)	-0.065	-1.525	-0.552	-0.014	0.387	1.305	0.500	122
High Score (8-9)	0.242	-0.467	0.011	0.243	0.495	0.898	0.761	943
High-Low	0.307	1.058	0.563	0.257	0.107	-0.408		1,065
High-All	0.054	0.170	0.057	0.019	0.027	0.002		

Resampling Result	Mean	5%	25%	Median	75%	95%
FSCORE						
Pseudo Low Mean	0.187	-0.633	-0.047	0.225	0.468	0.892
Pseudo Low	0	0	0	0	0	1000
(p-Value)	0.000	0.000	0.000	0.000	0.000	1.000
Pseudo High Mean	0.185	-0.613	-0.050	0.226	0.465	0.878
Pseudo High	88	118	157	318	232	379
(p-Value)	0.088	0.118	0.157	0.318	0.232	0.379
Pseudo High-Low Mean	-0.002	0.019	-0.003	0.000	-0.003	-0.014
Pseudo High-Low	0	0	0	0	7	1000
(p-Value)	0.000	0.000	0.000	0.000	0.007	1.000
Pseudo High-All Mean	-0.002	0.024	-0.003	0.002	-0.003	-0.017
Pseudo High-All	88	118	157	318	232	379
(p-Value)	0.088	0.118	0.157	0.318	0.232	0.379

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[35] Two-Year Market Returns: 24 month buy and hold return of the firm from five months after fiscal year end. If a firm delists the return is considered zero.

Table 4d: FSCORE All Firms (6,264)

Two-Year Market Adjusted Returns[36]	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.011	-0.699	-0.188	0.034	0.239	0.655	0.544	6,264
FSCORE								
0	-	-	-	-	-	-	-	0
1	-0.174	-1.244	-0.633	-0.215	0.489	1.027	0.464	28
2	-0.262	-1.692	-0.683	-0.165	0.219	1.141	0.394	94
3	-0.135	-0.978	-0.404	-0.048	0.193	0.657	0.468	235
4	-0.041	-0.834	-0.233	0.002	0.217	0.671	0.507	590
5	-0.013	-0.644	-0.216	-0.002	0.196	0.583	0.497	1,307
6	0.019	-0.640	-0.161	0.044	0.230	0.606	0.565	1,594
7	0.049	-0.570	-0.158	0.055	0.271	0.681	0.567	1,473
8	0.072	-0.485	-0.129	0.065	0.260	0.722	0.592	811
9	0.081	-0.448	-0.128	0.114	0.275	0.628	0.621	132
Low Score (1-2)	-0.242	-1.589	-0.672	-0.177	0.281	1.115	0.410	122
High Score (8-9)	0.073	-0.480	-0.129	0.072	0.262	0.709	0.596	943
High-Low	0.315	1.109	0.542	0.248	-0.019	-0.406		1,065
High-All	0.062	0.220	0.059	0.038	0.023	0.054		

Resampling Result	Mean	5%	25%	Median	75%	95%
FSCORE						
Pseudo Low Mean	0.012	-0.669	-0.184	0.035	0.238	0.641
Pseudo Low	0	0	0	0	858	998
(p-Value)	0.000	0.000	0.000	0.000	0.858	0.998
Pseudo High Mean	0.012	-0.689	-0.187	0.035	0.240	0.658
Pseudo High	0	0	0	1	53	94
(p-Value)	0.000	0.000	0.000	0.001	0.053	0.094
Pseudo High-Low Mean	-0.001	-0.020	-0.003	0.000	0.001	0.017
Pseudo High-Low	0	0	0	0	709	998
(p-Value)	0.000	0.000	0.000	0.000	0.709	0.998
Pseudo High-All Mean	0.001	0.010	0.001	0.001	0.001	0.003
Pseudo High-All	215	1000	1000	1	0	0
(p-Value)	0.215	1.000	1.000	0.001	0.000	0.000

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[36] Two-Year Market Adjusted Returns: 24 month buy and hold return of the firm from five months after fiscal year end less the buy and hold return of the value weighted market index over the same period. If a firm delists the return is considered zero.

5.1.2. LA4CTYUS Index: FSCORE

The average firm earns its investors 8.9% (one-year return), 0.4% (one-year market adjusted return), 18.8% (two-year return), 1.1% (two-year market adjusted return), average return rates in the period 2002-2013. The median returns of 12.9% (one-year return), 1.4% (one-year market adjusted return), 18.8% (two-year market return), 1.1% (two-year market adjusted return), higher than the mean, signals that the majority of stocks earn positive return rates. This is further reflected through the per cent of positive return rates.

Of the 6,264 observations from 2002-2013 28 firm years achieve a FSCORE of one (1), and 94 a score of two (2), totalling 122/6,264 or 1.95% of the index. Firms scoring one (1) or two (2) are considered low FSCORE firms and shorted five months after fiscal year end for 12 or 24 months.

The resampling statistic randomly selects firms, without replacement, out of the total sample to produce a pseudo low portfolio consisting of 122 observations. This procedure is multiplied by 1,000 to represent a hypothesis under the null. The null hypothesis expects the FSCORE portfolio mean or percentile to produce lower rates of return than the respective pseudo low portfolio. The alternative hypothesis expects the FSCORE portfolio mean or percentile to produce higher rates of return than the respective pseudo low portfolio. The critical value to reject the null hypothesis is reached at 25 pseudo observations showing higher (negative) returns[37]. For any resampling result with a p-value of 0.025 to 1.000 the alternative hypothesis is rejected as there is no significant evidence to reject the null hypothesis. The low FSCORE portfolio is able to outperform the pseudo low portfolio in regards to mean, 5% percentile, 25% percentile and median for one-year returns, one-year market adjusted returns, two-year returns and two-year market adjusted returns. The two-year market adjusted pseudo low returns 75% percentile achieves 858 cases of lower return rates than the empirical low FSCORE portfolio. In the 95% percentile all pseudo low portfolios deliver lower returns, hence indicating that the empirical low FSCORE portfolio, although including significant negative return observations, also include significant higher percentile observations.

High FSCORE observations include 811 companies with a score of eight (8), and 132 attaining nine (9), totalling 943, or 15.1% of the index. The null hypothesis expects the FSCORE

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[37] A critical value of 0.025 is chosen due to the one-sided test, rather than a critical value of 0.05 for two-sided tests.

portfolio mean or percentile to produce higher rates of return than the respective pseudo high portfolio. The alternative hypothesis expects the FSCORE portfolio mean or percentile to produce lower rates of return than the respective pseudo high portfolio. The critical value to reject the null hypothesis is reached at 25 pseudo observations showing higher (positive) returns[38]. For any resampling result with a p-value of 0.025 to 1.000 the alternative hypothesis is rejected as there is no significant evidence to reject the null hypothesis. The high FSCORE portfolio is able to outperform the pseudo high portfolio in regards to mean, 5% percentile, 25% percentile and median for one-year returns, one-year market adjusted returns and two-year market adjusted returns. The empirical FSCORE portfolio is beaten by the two-year market adjusted pseudo high portfolios in regards to mean and percentile underperforming the randomly selected firms in 88 to 379 cases. All FSCORE portfolios are also beaten when it comes to the 95% percentile for all market returns.

A similar strategy is applied to portfolios based on EESG scores. Firms achieving a low score (0-20) are shorted for 12 or 24 months five months after fiscal year end. Companies scoring from 81-100 are longed for the same period of time. The following tables examines a buy-and-hold strategy of firm observations from 2002-2013 in regards to the EESG scores, economic, environmental, social and governmental shorting low performing firms and longing high performing firms.

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[38] A critical value of 0.025 is chosen due to the one-sided test, rather than a critical value of 0.05 for two-sided tests.

Table 5a: ECNSCORE All Firms (6,264)

One-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.089	-0.579	-0.078	0.129	0.296	0.616	0.671	6,264
ECNSCORE								
0-10	0.009	-1.028	-0.266	0.099	0.322	0.773	0.575	346
11-20	0.042	-0.865	-0.167	0.110	0.322	0.737	0.616	558
21-30	0.055	-0.707	-0.148	0.095	0.295	0.687	0.621	588
31-40	0.068	-0.576	-0.087	0.111	0.283	0.549	0.640	577
41-50	0.113	-0.517	-0.057	0.140	0.294	0.685	0.699	614
51-60	0.126	-0.521	-0.066	0.155	0.335	0.683	0.682	644
61-70	0.123	-0.487	-0.024	0.155	0.302	0.618	0.716	652
71-80	0.095	-0.464	-0.056	0.124	0.266	0.557	0.682	670
81-90	0.097	-0.466	-0.042	0.122	0.279	0.530	0.692	795
91-100	0.110	-0.413	-0.031	0.134	0.282	0.525	0.713	820
Low Score (0-20)	0.029	-0.928	-0.205	0.106	0.322	0.751	0.601	904
High Score (81-100)	0.103	-0.439	-0.036	0.128	0.281	0.528	0.703	1,615
High-Low	0.074	0.488	0.169	0.023	-0.041	-0.223		2,519
High-All	0.014	0.140	0.042	-0.001	-0.016	-0.089		

Resampling Result	Mean	5%	25%	Median	75%	95%
ECNSCORE						
Pseudo Low Mean	0.089	-0.576	-0.078	0.129	0.296	0.615
Pseudo Low	0	0	0	0	1000	1000
(p-Value)	0.000	0.000	0.000	0.000	1.000	1.000
Pseudo High Mean	0.089	-0.575	-0.078	0.128	0.296	0.615
Pseudo High	105	0	6	521	918	1000
(p-Value)	0.105	0.000	0.006	0.521	0.918	1.000
Pseudo High-Low Mean	0.000	0.000	0.000	0.000	0.000	0.000
Pseudo High-Low	0	0	0	24	999	1000
(p-Value)	0.000	0.000	0.000	0.024	0.999	1.000
Pseudo High-All Mean	0.000	0.004	0.000	-0.001	0.000	-0.002
Pseudo High-All	105	0	6	521	918	1000
(p-Value)	0.105	0.000	0.006	0.521	0.918	1.000

Table 5b: ECNSCORE All Firms (6,264)

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.004	-0.511	-0.148	0.014	0.173	0.481	0.524	6,264
ECNSCORE								
0-10	-0.054	-0.908	-0.277	-0.033	0.207	0.665	0.465	346
11-20	-0.033	-0.785	-0.199	-0.013	0.203	0.561	0.482	558
21-30	-0.021	-0.709	-0.192	-0.004	0.185	0.528	0.495	588
31-40	-0.013	-0.536	-0.165	0.015	0.174	0.411	0.515	577
41-50	0.017	-0.482	-0.140	0.016	0.175	0.516	0.528	614
51-60	0.034	-0.437	-0.149	0.032	0.207	0.547	0.554	644
61-70	0.029	-0.419	-0.126	0.029	0.179	0.495	0.564	652
71-80	0.001	-0.417	-0.140	0.006	0.130	0.415	0.507	670
81-90	0.016	-0.389	-0.122	0.025	0.156	0.414	0.547	795
91-100	0.018	-0.354	-0.122	0.016	0.163	0.405	0.537	820
Low Score (0-20)	-0.041	-0.832	-0.229	-0.020	0.205	0.601	0.476	904
High Score (81-100)	0.017	-0.371	-0.122	0.020	0.160	0.409	0.542	1,615
High-Low	0.058	0.461	0.107	0.041	-0.045	-0.191		2,519
High-All	0.014	0.140	0.026	0.007	-0.013	-0.072		

Resampling Result ECNSCORE	Mean	5%	25%	Median	75%	95%
Pseudo Low Mean	0.003	-0.505	-0.148	0.014	0.172	0.478
Pseudo Low	0	0	0	0	1000	1000
(p-Value)	0.000	0.000	0.000	0.000	1.000	1.000
Pseudo High Mean	0.004	-0.505	-0.147	0.014	0.173	0.482
Pseudo High	28	0	0	152	964	1000
(p-Value)	0.028	0.000	0.000	0.152	0.964	1.000
Pseudo High-Low Mean	0.001	-0.001	0.000	0.001	0.000	0.004
Pseudo High-Low	0	0	0	0	1000	1000
(p-Value)	0.000	0.000	0.000	0.000	1.000	1.000
Pseudo High-All Mean	0.000	0.006	0.000	0.000	0.000	0.001
Pseudo High-All	28	0	0	152	964	1000
(p-Value)	0.028	0.000	0.000	0.152	0.964	1.000

Table 5c: ECNSCORE All Firms (6,264)

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.188	-0.637	-0.046	0.224	0.467	0.895	0.719	6,264
ECNSCORE								
0-10	0.131	-0.901	-0.237	0.166	0.502	1.140	0.659	346
11-20	0.152	-0.848	-0.113	0.197	0.497	0.964	0.674	558
21-30	0.169	-0.771	-0.129	0.234	0.497	1.023	0.684	588
31-40	0.172	-0.691	-0.058	0.224	0.467	0.886	0.702	577
41-50	0.198	-0.649	-0.062	0.237	0.484	0.967	0.717	614
51-60	0.213	-0.608	-0.042	0.241	0.499	0.932	0.728	644
61-70	0.222	-0.494	-0.024	0.239	0.503	0.862	0.730	652
71-80	0.186	-0.526	-0.027	0.218	0.442	0.847	0.727	670
81-90	0.200	-0.487	0.007	0.227	0.440	0.785	0.757	795
91-100	0.196	-0.416	0.005	0.220	0.431	0.758	0.751	820
Low Score (0-20)	0.144	-0.868	-0.160	0.185	0.499	1.031	0.668	904
High Score (81-100)	0.198	-0.451	0.006	0.223	0.435	0.771	0.754	1,615
High-Low	0.054	0.417	0.166	0.038	-0.064	-0.260		2,519
High-All	0.010	0.186	0.052	-0.001	-0.032	-0.124		

Resampling Result ECNSCORE	Mean	5%	25%	Median	75%	95%
Pseudo Low Mean	0.189	-0.630	-0.045	0.226	0.468	0.893
Pseudo Low	4	0	0	2	982	999
(p-Value)	0.004	0.000	0.000	0.002	0.982	0.999
Pseudo High Mean	0.188	-0.632	-0.046	0.225	0.467	0.894
Pseudo High	176	0	0	548	999	1000
(p-Value)	0.176	0.000	0.000	0.548	0.999	1.000
Pseudo High-Low Mean	-0.001	-0.003	-0.002	-0.001	-0.001	0.001
Pseudo High-Low	0	0	0	12	1000	1000
(p-Value)	0.000	0.000	0.000	0.012	1.000	1.000
Pseudo High-All Mean	0.000	0.005	0.000	0.001	0.000	-0.001
Pseudo High-All	176	0	0	548	999	1000
(p-Value)	0.176	0.000	0.000	0.548	0.999	1.000

Table 5d: ECNSCORE All Firms (6,264)

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.011	-0.699	-0.188	0.034	0.239	0.655	0.544	6,264
ECNSCORE								
0-10	-0.039	-0.993	-0.298	0.018	0.340	0.891	0.520	346
11-20	-0.022	-0.987	-0.234	0.018	0.258	0.776	0.520	558
21-30	-0.012	-0.824	-0.247	0.040	0.266	0.755	0.539	588
31-40	-0.002	-0.713	-0.213	0.022	0.245	0.610	0.523	577
41-50	0.016	-0.658	-0.205	0.035	0.250	0.696	0.541	614
51-60	0.036	-0.698	-0.189	0.053	0.287	0.715	0.568	644
61-70	0.043	-0.593	-0.160	0.063	0.244	0.651	0.577	652
71-80	0.006	-0.559	-0.167	0.015	0.211	0.599	0.531	670
81-90	0.027	-0.520	-0.141	0.038	0.215	0.561	0.556	795
91-100	0.021	-0.478	-0.154	0.033	0.199	0.536	0.544	820
Low Score (0-20)	-0.029	-0.989	-0.258	0.018	0.289	0.820	0.520	904
High Score (81-100)	0.024	-0.499	-0.147	0.036	0.207	0.548	0.550	1,615
High-Low	0.053	0.491	0.111	0.017	-0.083	-0.272		2,519
High-All	0.013	0.201	0.040	0.002	-0.032	-0.107		

Resampling Result ECNSCORE	Mean	5%	25%	Median	75%	95%
Pseudo Low Mean	0.011	-0.688	-0.187	0.034	0.239	0.657
Pseudo Low	2	0	0	83	1000	1000
(p-Value)	0.002	0.000	0.000	0.083	1.000	1.000
Pseudo High Mean	0.011	-0.692	-0.187	0.034	0.239	0.656
Pseudo High	90	0	0	422	1000	1000
(p-Value)	0.090	0.000	0.000	0.422	1.000	1.000
Pseudo High-Low Mean	0.000	-0.005	0.000	0.000	0.000	-0.002
Pseudo High-Low	0	0	0	110	1000	1000
(p-Value)	0.000	0.000	0.000	0.110	1.000	1.000
Pseudo High-All Mean	0.000	0.007	0.001	0.000	0.000	0.001
Pseudo High-All	90	0	0	422	1000	1000
(p-Value)	0.090	0.000	0.000	0.422	1.000	1.000

5.1.1. LA4CTYUS Index: EESG Economic

Of the 6,264 observations from 2002-2013 346 firm observations achieve a ECNSCORE of 0-10, and 558 a score of 11-20 totalling 904/6,264 or 14.4% of the index. High ECNSCORE firms includes 795 observations for 81-90 and 820 for 91-100, totalling 1,615/6,264, or 25.8% Firms scoring 0-20 are considered low EESG firms and shorted five months after fiscal year end for 12 or 24 months.

The average low ECNSCORE firm earns its investor an average return of 2.9% (one-year market return), -4.1% (one-year market adjusted return), 14.4% (two-year market return) and -2.9% (two-year market adjusted return). The low ECNSCORE portfolio show significant lower returns for mean, 5% percentile, 25% percentile and medians (except two-year market adjusted returns) for all return rates than the pseudo low portfolios. On the other hand, 75%- and 95% percentiles show that the pseudo portfolios heavily outperform the empirical low ECNSCORE portfolio in 980 to 1,000 cases indicating that the low economic score portfolio includes firms performing above average returns.

High ECNSCORE firms create an average return of 10.3% (one-year market return), 1.7% (one-year market adjusted return), 19.8% (two-year market return) and 2.4% (two-year market adjusted return). The high ECNSCORE portfolio is unable to show significant higher returns for mean, median, 75% percentile and 95% percentile. For 5%- and 25%-percentiles the empirical portfolio is able to outperform the pseudo portfolios. This indicates that although high economic score firms on average earn higher returns for the lower percentiles than the average firm, longing high economic score firms also limits the ability to earn higher returns. Among the four EESG variables the economic variable is expected to produce the highest returns.

Next, the main pillars of the ESG index, economic, social and governmental components are examined with a similar mind set. Shorting low scoring firms and longing high scoring firms for 12 or 24 months five months after fiscal year end expecting low scoring firms to earn negative returns and high scoring firms to deliver higher returns over time.

Table 6a: ENVSCORE All Firms (6,264)

One-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.089	-0.579	-0.078	0.129	0.296	0.616	0.671	6,264
ENVSCORE								
0-10	0.027	-0.727	-0.159	0.109	0.288	0.544	0.627	279
11-20	0.089	-0.606	-0.102	0.128	0.320	0.683	0.648	1,991
21-30	0.091	-0.546	-0.072	0.115	0.304	0.671	0.670	652
31-40	0.104	-0.546	-0.059	0.159	0.312	0.631	0.674	405
41-50	0.097	-0.655	-0.090	0.124	0.315	0.631	0.672	320
51-60	0.100	-0.590	-0.065	0.160	0.313	0.627	0.690	300
61-70	0.099	-0.456	-0.037	0.131	0.293	0.550	0.682	343
71-80	0.092	-0.568	-0.039	0.141	0.295	0.549	0.703	438
81-90	0.100	-0.468	-0.044	0.134	0.271	0.544	0.700	713
91-100	0.080	-0.515	-0.057	0.113	0.256	0.514	0.687	823
Low Score (0-20)	0.082	-0.621	-0.109	0.125	0.316	0.666	0.646	2,270
High Score (81-100)	0.089	-0.493	-0.051	0.123	0.263	0.528	0.693	1,536
High-Low	0.008	0.128	0.058	-0.003	-0.053	-0.138		3,806
High-All	0.000	0.086	0.027	-0.006	-0.033	-0.088		

Resampling Result ENVSCORE	Mean	5%	25%	Median	75%	95%
Pseudo Low Mean	0.089	-0.574	-0.078	0.129	0.296	0.615
Pseudo Low	190	74	3	347	994	995
(p-Value)	0.190	0.074	0.003	0.347	0.994	0.995
Pseudo High Mean	0.089	-0.576	-0.077	0.129	0.296	0.616
Pseudo High	500	0	3	842	1000	1000
(p-Value)	0.500	0.000	0.003	0.842	1.000	1.000
Pseudo High-Low Mean	0.000	-0.002	0.000	0.000	0.000	0.001
Pseudo High-Low	240	0	0	613	1000	1000
(p-Value)	0.240	0.000	0.000	0.613	1.000	1.000
Pseudo High-All Mean	0.000	0.003	0.001	0.000	0.000	0.000
Pseudo High-All	500	0	3	842	1000	1000
(p-Value)	0.500	0.000	0.003	0.842	1.000	1.000

Table 6b: ENVSCORE All Firms (6,264)

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.004	-0.511	-0.148	0.014	0.173	0.481	0.524	6,264
ENVSCORE								
0-10	-0.055	-0.643	-0.213	-0.006	0.160	0.398	0.491	279
11-20	0.015	-0.563	-0.158	0.024	0.216	0.543	0.534	1,991
21-30	0.009	-0.531	-0.155	0.015	0.186	0.569	0.526	652
31-40	0.016	-0.517	-0.135	0.034	0.186	0.492	0.563	405
41-50	0.016	-0.490	-0.145	0.009	0.173	0.501	0.522	320
51-60	0.011	-0.444	-0.148	0.013	0.177	0.467	0.533	300
61-70	-0.007	-0.477	-0.140	-0.005	0.146	0.403	0.490	343
71-80	-0.001	-0.443	-0.135	0.020	0.171	0.448	0.543	438
81-90	0.000	-0.431	-0.133	0.003	0.145	0.387	0.506	713
91-100	-0.012	-0.413	-0.142	0.003	0.127	0.384	0.507	823
Low Score (0-20)	0.006	-0.573	-0.165	0.020	0.209	0.525	0.529	2,270
High Score (81-100)	-0.007	-0.421	-0.138	0.003	0.136	0.385	0.507	1,536
High-Low	-0.013	0.151	0.027	-0.018	-0.074	-0.139		3,806
High-All	-0.010	0.090	0.010	-0.011	-0.037	-0.096		

Resampling Result	Mean	5%	25%	Median	75%	95%
ENVSCORE						
Pseudo Low Mean	0.004	-0.506	-0.148	0.014	0.173	0.482
Pseudo Low	670	0	5	911	1000	995
(p-Value)	0.670	0.000	0.005	0.911	1.000	0.995
Pseudo High Mean	0.003	-0.507	-0.148	0.014	0.173	0.482
Pseudo High	910	0	97	969	1000	1000
(p-Value)	0.910	0.000	0.097	0.969	1.000	1.000
Pseudo High-Low Mean	0.000	-0.001	0.000	0.000	0.000	-0.001
Pseudo High-Low	926	0	0	989	1000	1000
(p-Value)	0.926	0.000	0.000	0.989	1.000	1.000
Pseudo High-All Mean	0.000	0.004	0.000	0.000	0.000	0.000
Pseudo High-All	910	0	97	969	1000	1000
(p-Value)	0.910	0.000	0.097	0.969	1.000	1.000

Table 6c: ENVSCORE All Firms (6,264)

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.188	-0.637	-0.046	0.224	0.467	0.895	0.719	6,264
ENVSCORE								
0-10	0.188	-0.672	-0.024	0.258	0.482	0.793	0.731	279
11-20	0.178	-0.716	-0.109	0.209	0.507	0.987	0.680	1,991
21-30	0.169	-0.671	-0.040	0.202	0.461	0.896	0.722	652
31-40	0.204	-0.740	-0.039	0.248	0.484	0.969	0.736	405
41-50	0.187	-0.680	-0.051	0.232	0.465	0.923	0.713	320
51-60	0.239	-0.642	0.036	0.272	0.516	0.880	0.777	300
61-70	0.182	-0.551	-0.039	0.213	0.433	0.767	0.726	343
71-80	0.192	-0.550	-0.050	0.250	0.479	0.861	0.717	438
81-90	0.208	-0.475	-0.016	0.239	0.450	0.800	0.739	713
91-100	0.182	-0.489	0.011	0.207	0.406	0.766	0.757	823
Low Score (0-20)	0.179	-0.711	-0.098	0.215	0.504	0.963	0.686	2,270
High Score (81-100)	0.194	-0.482	-0.002	0.222	0.426	0.781	0.749	1,536
High-Low	0.015	0.229	0.097	0.006	-0.077	-0.182		3,806
High-All	0.006	0.155	0.045	-0.003	-0.041	-0.114		

Resampling Result ENVSCORE	Mean	5%	25%	Median	75%	95%		
Pseudo Low Mean	0.188	-0.636	-0.046	0.225	0.467	0.894		
Pseudo Low	156	0	0	77	1000	1000		
(p-Value)	0.156	0.000	0.000	0.077	1.000	1.000		
Pseudo High Mean	0.187	-0.635	-0.047	0.225	0.467	0.892		
Pseudo High	268	0	2	637	1000	1000		
(p-Value)	0.268	0.000	0.002	0.637	1.000	1.000		
Pseudo High-Low Mean	0.000	0.001	-0.001	0.000	0.000	-0.002		
Pseudo High-Low	141	0	0	324	1000	1000		
(p-Value)	0.141	0.000	0.000	0.324	1.000	1.000		
Pseudo High-All Mean	0.000	0.002	0.000	0.001	0.000	-0.003		
Pseudo High-All	268	0	2	637	1000	1000		
(p-Value)	0.268	0.000	0.002	0.637	1.000	1.000		

Table 6d: ENVSCORE All Firms (6,264)

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.011	-0.699	-0.188	0.034	0.239	0.655	0.544	6,264
ENVSCORE								
0-10	-0.044	-0.695	-0.238	-0.002	0.197	0.486	0.498	279
11-20	0.021	-0.766	-0.213	0.054	0.298	0.762	0.555	1,991
21-30	-0.003	-0.753	-0.185	0.032	0.255	0.714	0.551	652
31-40	0.025	-0.746	-0.178	0.050	0.279	0.681	0.560	405
41-50	0.018	-0.640	-0.188	0.023	0.233	0.633	0.544	320
51-60	0.047	-0.607	-0.129	0.051	0.266	0.716	0.547	300
61-70	-0.011	-0.630	-0.208	0.014	0.200	0.521	0.525	343
71-80	0.014	-0.676	-0.185	0.050	0.228	0.577	0.559	438
81-90	0.015	-0.571	-0.163	0.027	0.209	0.580	0.537	713
91-100	-0.003	-0.568	-0.154	0.013	0.177	0.513	0.524	823
Low Score (0-20)	0.013	-0.757	-0.217	0.047	0.285	0.728	0.548	2,270
High Score (81-100)	0.005	-0.569	-0.159	0.019	0.192	0.544	0.530	1,536
High-Low	-0.008	0.188	0.058	-0.028	-0.093	-0.184		3,806
High-All	-0.006	0.130	0.029	-0.015	-0.047	-0.111		

Resampling Result	Mean	5%	25%	Median	75%	95%
ENVSCORE						
Pseudo Low Mean	0.011	-0.694	-0.187	0.034	0.238	0.656
Pseudo Low	615	0	0	974	1000	1000
(p-Value)	0.615	0.000	0.000	0.974	1.000	1.000
Pseudo High Mean	0.011	-0.692	-0.187	0.034	0.238	0.657
Pseudo High	713	1	7	960	1000	1000
(p-Value)	0.713	0.001	0.007	0.960	1.000	1.000
Pseudo High-Low Mean	0.000	0.002	0.000	0.000	0.000	0.001
Pseudo High-Low	733	0	0	995	1000	1000
(p-Value)	0.733	0.000	0.000	0.995	1.000	1.000
Pseudo High-All Mean	0.000	0.007	0.001	0.000	-0.001	0.002
Pseudo High-All	713	1	7	960	1000	1000
(p-Value)	0.713	0.001	0.007	0.960	1.000	1.000

5.1.1. LA4CTYUS Index: EESG Environmental

Of the 6,264 observations from 2002-2013 279 firm observations achieve an ENVSCORE of 0-10, and 1,991 a score of 11-20 totalling 2,270/6,264 or 36.2% of the index. High ECNSCORE firms includes 713 observations for 81-90 and 823 for 91-100, totalling 1,536/6,264, or 24.5% Firms scoring 0-20 are considered low EESG firms and shorted five months after fiscal year end for 12 or 24 months.

The average low ENVSCORE firm earns its investor an average return of 8.2% (one-year market return), 0.6% (one-year market adjusted return), 17.9% (two-year market return) and -1.3% (two-year market adjusted return). The low ENVSCORE portfolio show significant lower returns for mean, 5% percentile and 25% percentile for all return rates than the pseudo low portfolios. On the other hand, medians, 75%- and 95%-percentiles show that the pseudo portfolios heavily outperform the empirical low ECNSCORE portfolio in 77 to 1,000 cases indicating that the low environmental score portfolio includes firms performing above average returns.

High ENVSCORE firms create an average return of 8.9% (one-year market return), -0.7% (one-year market adjusted return), 19.4% (two-year market return) and 0.5% (two-year market adjusted return). The high ENVSCORE portfolio is unable to show significant higher returns for mean, median, 75% percentile and 95% percentile. For 5%- and 25%-percentiles the empirical portfolio is able to outperform the pseudo portfolios. This indicates that although high environmental score firms on average earn higher returns for the lower percentiles than the average firm, longing high environmental score firms also limits the ability to earn higher returns.

Table 7a: CGVSCORE All Firms (6,264)

One-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.089	-0.579	-0.078	0.129	0.296	0.616	0.671	6,264
CGVSCORE								
0-10	-0.049	-0.809	-0.371	0.013	0.259	0.632	0.520	25
11-20	0.116	-0.518	-0.036	0.148	0.309	0.633	0.688	77
21-30	0.106	-0.448	-0.072	0.133	0.291	0.504	0.640	75
31-40	0.159	-0.441	-0.102	0.182	0.425	0.841	0.637	113
41-50	0.126	-0.504	-0.057	0.144	0.371	0.695	0.693	261
51-60	0.083	-0.699	-0.103	0.118	0.305	0.654	0.654	497
61-70	0.102	-0.599	-0.068	0.144	0.324	0.677	0.676	936
71-80	0.095	-0.556	-0.074	0.128	0.300	0.616	0.667	1,545
81-90	0.069	-0.615	-0.084	0.120	0.274	0.568	0.668	1,794
91-100	0.090	-0.515	-0.060	0.124	0.275	0.550	0.691	941
Low Score (0-20)	0.075	-0.589	-0.118	0.115	0.297	0.633	0.647	102
High Score (81-100)	0.077	-0.580	-0.076	0.121	0.274	0.562	0.676	2,735
High-Low	0.001	0.009	0.042	0.007	-0.022	-0.071		2,837
High-All	-0.013	-0.001	0.002	-0.007	-0.022	-0.054		

Resampling Result	Mean	5%	25%	Median	75%	95%
CGVSCORE						
Pseudo Low Mean	0.089	-0.575	-0.078	0.129	0.296	0.616
Pseudo Low	7	258	0	4	551	914
(p-Value)	0.007	0.258	0.000	0.004	0.551	0.914
Pseudo High Mean	0.090	-0.549	-0.075	0.127	0.295	0.602
Pseudo High	639	621	529	594	726	646
(p-Value)	0.639	0.621	0.529	0.594	0.726	0.646
Pseudo High-Low Mean	0.001	0.026	0.002	-0.001	-0.001	-0.015
Pseudo High-Low	483	589	237	402	723	726
(p-Value)	0.483	0.589	0.237	0.402	0.723	0.726
Pseudo High-All Mean	0.001	0.030	0.003	-0.001	-0.001	-0.015
Pseudo High-All	639	621	529	594	726	646
(p-Value)	0.639	0.621	0.529	0.594	0.726	0.646

Table 7b: CGVSCORE All Firms (6,264)

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.004	-0.511	-0.148	0.014	0.173	0.481	0.524	6,264
CGVSCORE								
0-10	-0.097	-0.832	-0.424	-0.042	0.177	0.367	0.440	25
11-20	0.047	-0.545	-0.103	0.044	0.235	0.583	0.545	77
21-30	0.046	-0.290	-0.114	0.033	0.143	0.501	0.600	75
31-40	0.076	-0.409	-0.155	0.043	0.296	0.661	0.540	113
41-50	0.024	-0.515	-0.184	0.026	0.248	0.545	0.533	261
51-60	-0.007	-0.566	-0.172	0.012	0.187	0.516	0.523	497
61-70	0.001	-0.566	-0.155	0.017	0.188	0.512	0.532	936
71-80	0.014	-0.452	-0.145	0.018	0.173	0.493	0.533	1,545
81-90	-0.015	-0.537	-0.150	0.002	0.150	0.431	0.501	1,794
91-100	0.012	-0.399	-0.130	0.023	0.157	0.430	0.536	941
Low Score (0-20)	0.012	-0.615	-0.182	0.023	0.221	0.530	0.520	102
High Score (81-100)	-0.006	-0.490	-0.143	0.009	0.152	0.431	0.513	2,735
High-Low	-0.018	0.126	0.039	-0.014	-0.069	-0.099		2,837
High-All	-0.010	0.022	0.005	-0.005	-0.020	-0.050		

Resampling Result	Mean	5%	25%	Median	75%	95%
CGVSCORE						
Pseudo Low Mean	0.005	-0.489	-0.146	0.014	0.173	0.470
Pseudo Low	566	110	145	611	909	777
(p-Value)	0.566	0.110	0.145	0.611	0.909	0.777
Pseudo High Mean	0.003	-0.507	-0.148	0.014	0.172	0.482
Pseudo High	977	156	146	851	1000	1000
(p-Value)	0.977	0.156	0.146	0.851	1.000	1.000
Pseudo High-Low Mean	-0.002	-0.018	-0.002	0.000	-0.001	0.011
Pseudo High-Low	689	94	118	674	973	921
(p-Value)	0.689	0.094	0.118	0.674	0.973	0.921
Pseudo High-All Mean	0.000	0.004	0.000	0.000	0.000	0.000
Pseudo High-All	977	156	146	851	1000	1000
(p-Value)	0.977	0.156	0.146	0.851	1.000	1.000

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.188	-0.637	-0.046	0.224	0.467	0.895	0.719	6,264
CGVSCORE								
0-10	0.146	-0.766	-0.173	0.192	0.438	0.911	0.640	25
11-20	0.299	-0.542	0.112	0.340	0.566	1.216	0.818	77
21-30	0.224	-0.512	0.035	0.220	0.486	0.760	0.773	75
31-40	0.333	-0.331	-0.064	0.306	0.656	1.141	0.708	113
41-50	0.214	-0.689	-0.066	0.258	0.560	0.973	0.709	261
51-60	0.187	-0.731	-0.067	0.242	0.495	0.984	0.726	497
61-70	0.201	-0.685	-0.080	0.255	0.486	0.922	0.707	936
71-80	0.186	-0.651	-0.042	0.230	0.477	0.898	0.718	1,545
81-90	0.155	-0.621	-0.078	0.197	0.433	0.830	0.697	1,794
91-100	0.203	-0.458	0.010	0.223	0.439	0.799	0.760	941
Low Score (0-20)	0.261	-0.597	0.042	0.304	0.535	1.141	0.775	102
High Score (81-100)	0.172	-0.565	-0.048	0.206	0.435	0.820	0.719	2,735
High-Low	-0.090	0.032	-0.090	-0.098	-0.099	-0.322		2,837
High-All	-0.016	0.073	-0.001	-0.018	-0.032	-0.076		

Resampling Result	Mean	5%	25%	Median	75%	95%		
CGVSCORE								
Pseudo Low Mean	0.185	-0.608	-0.049	0.223	0.463	0.871		
Pseudo Low	946	494	938	953	927	978		
(p-Value)	0.946	0.494	0.938	0.953	0.927	0.978		
Pseudo High Mean	0.188	-0.636	-0.047	0.225	0.467	0.894		
Pseudo High	979	2	530	1000	1000	1000		
(p-Value)	0.979	0.002	0.530	1.000	1.000	1.000		
Pseudo High-Low Mean	0.002	-0.027	0.002	0.002	0.004	0.023		
Pseudo High-Low	975	343	938	982	976	997		
(p-Value)	0.975	0.343	0.938	0.982	0.976	0.997		
Pseudo High-All Mean	0.000	0.002	0.000	0.001	0.000	-0.001		
Pseudo High-All	979	2	530	1000	1000	1000		
(p-Value)	0.979	0.002	0.530	1.000	1.000	1.000		

Table 7d: CGVSCORE All Firms (6,264)

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.011	-0.699	-0.188	0.034	0.239	0.655	0.544	6,264
CGVSCORE								
0-10	0.021	-0.774	-0.267	0.068	0.309	0.572	0.560	25
11-20	0.110	-0.586	-0.133	0.167	0.355	0.832	0.636	77
21-30	0.072	-0.523	-0.172	0.068	0.278	0.665	0.600	75
31-40	0.134	-0.455	-0.122	0.084	0.354	1.117	0.575	113
41-50	0.013	-0.744	-0.206	0.050	0.298	0.760	0.552	261
51-60	-0.003	-0.873	-0.207	0.027	0.261	0.708	0.541	497
61-70	0.013	-0.728	-0.209	0.044	0.273	0.692	0.546	936
71-80	0.016	-0.650	-0.188	0.040	0.239	0.657	0.546	1,545
81-90	-0.011	-0.716	-0.191	0.020	0.207	0.616	0.530	1,794
91-100	0.021	-0.493	-0.159	0.031	0.206	0.582	0.547	941
Low Score (0-20)	0.088	-0.632	-0.166	0.143	0.344	0.768	0.618	102
High Score (81-100)	0.000	-0.639	-0.180	0.024	0.206	0.604	0.536	2,735
High-Low	-0.088	-0.007	-0.014	-0.119	-0.137	-0.164		2,837
High-All	-0.011	0.060	0.008	-0.010	-0.033	-0.051		

Resampling Result CGVSCORE	Mean	5%	25%	Median	75%	95%		
Pseudo Low Mean	0.013	-0.653	-0.185	0.035	0.238	0.635		
Pseudo Low	967	542	621	997	990	888		
(p-Value)	0.967	0.542	0.621	0.997	0.990	0.888		
Pseudo High Mean	0.011	-0.696	-0.187	0.034	0.239	0.657		
Pseudo High	968	4	191	985	1000	1000		
(p-Value)	0.968	0.004	0.191	0.985	1.000	1.000		
Pseudo High-Low Mean	-0.002	-0.043	-0.003	-0.001	0.002	0.023		
Pseudo High-Low	981	394	558	998	999	951		
(p-Value)	0.981	0.394	0.558	0.998	0.999	0.951		
Pseudo High-All Mean	0.000	0.004	0.001	0.000	0.000	0.003		
Pseudo High-All	968	4	191	985	1000	1000		
(p-Value)	0.968	0.004	0.191	0.985	1.000	1.000		

5.1.1. LA4CTYUS Index: EESG Governmental

The average firm earns its investors 7.5% (one-year return), 1.2% (one-year market adjusted return), 26.1% (two-year return), 8.8% (two-year market adjusted return), average return rates in the period 2002-2013. Of the 6,264 observations 25 firm years achieve a CGVSCORE between 0-10, and 77 a score between 11-20, totalling 102/6,264 or 1.63% of the index. Firms scoring between 0-20 are considered low CGVSCORE firms and shorted five months after fiscal year end for 12 or 24 months.

The average low CGVSCORE firm earns its investor an average return of 7.5% (one-year return), 1.2% (one-year market adjusted return), 26.1% (two-year return), 8.8% (two-year market adjusted return). The low CGVSCORE portfolio is delivering significant lower returns in regards to mean, 25% percentile and median, limited to one-year return rates. Two-year market returns and market adjusted returns pseudo portfolios all produce lower rates of return in a significant amount of cases, ranging from 110-990.

High CGVSCORE firms create an average return of 7.7% (one-year market return), -0.6% (one-year market adjusted return), 17.2% (two-year market return) and 0.00% (two-year market adjusted return). The high CGVSCORE portfolio fails to outperform the pseudo portfolios is all but two instances, the 5% percentile two-year market- and two-year market-adjusted returns.

Due to the poor results from both the low- and high-score portfolios, it does not come as a shock that the buy-and-hold strategy fails to deliver above average returns. In figures the high-low strategy earns its investor 0.1% (one-year return), -1.8% (one-year market adjusted return), -9% (two-year return) and -8.8% (two-year market adjusted return). Evaluating the pseudo high-low portfolios there is no evidence that the empirical portfolio is able to outperform randomly selected firms. With a p-value of 0.094 to .999 the pseudo portfolios strongly outperform the empirical.

Last, the pseudo high portfolios less the index averages are examined. For all instances except 5% percentiles for two-year market- and two-year market-adjusted returns, the pseudo portfolios are able to outperform the high-all empirical portfolio. The high-all strategy earns its investor an average return of -1.3% (one-year return), -1.0% (one-year market adjusted return), -1.6% (two-year return), -1.1% (two-year market adjusted return).

The CGVSCORE variable is, in the majority of the cases, unable to select winners from losers by using a buy-and-hold strategy shorting low scoring firms and longing high scoring firms. As no group show negative returns across return rates, shorting a stock is unadvised in the case that the stock increases in value. The 11-40 range produces the highest returns with an average return of 13.5%[39] (one-year return), 5.91%[40] (one-year market adjusted return), 22.2%[41] (two-year return), and 11.0%[42] (two-year market adjusted return). More specifically range 31-40 delivers strong performance at 15.9% (one-year return), 7.6% (one-year market adjusted return), 33.3% (two-year return) and 13.4% (two-year market adjusted return), well above the index.

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[39] ((0.116*77) + (0.106*75) + (0.159*113)) / (77 + 75 + 113)
[40] ((0.047*77) + (0.046*75) + (0.076*113)) / /77 + 75 + 113)
[41] ((0.299*77) + (0.224*75) + (0.333*113)) / (77 + 75 + 113)
[42] ((0.110*77) + (0.072*75) + (0.134*113)) / (77 + 75 + 113)

Table 8a: SOCSCORE All Firms (6,264)

One-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.089	-0.579	-0.078	0.129	0.296	0.616	0.671	6,264
SOCSCORE								
0-10	0.079	-0.713	-0.170	0.104	0.362	0.784	0.600	403
11-20	0.086	-0.637	-0.087	0.128	0.313	0.611	0.664	932
21-30	0.099	-0.613	-0.074	0.154	0.309	0.668	0.680	846
31-40	0.086	-0.545	-0.103	0.121	0.312	0.628	0.655	649
41-50	0.102	-0.551	-0.072	0.136	0.299	0.632	0.662	553
51-60	0.104	-0.534	-0.043	0.141	0.295	0.597	0.688	545
61-70	0.074	-0.573	-0.089	0.125	0.289	0.565	0.687	508
71-80	0.077	-0.589	-0.093	0.112	0.273	0.559	0.677	524
81-90	0.086	-0.499	-0.059	0.127	0.254	0.519	0.684	670
91-100	0.092	-0.434	-0.033	0.120	0.268	0.503	0.694	634
Low Score (0-20)	0.084	-0.660	-0.112	0.120	0.328	0.663	0.645	1,335
High Score (81-100)	0.089	-0.468	-0.047	0.124	0.261	0.511	0.689	1,304
High-Low	0.005	0.192	0.065	0.003	-0.067	-0.152		2,639
High-All	0.000	0.112	0.032	-0.005	-0.035	-0.105		

Resampling Result	Mean	5%	25%	Median	75%	95%
SOCSCORE						
Pseudo Low Mean	0.090	-0.573	-0.077	0.129	0.296	0.615
Pseudo Low	281	3	7	164	999	979
(p-Value)	0.281	0.003	0.007	0.164	0.999	0.979
Pseudo High Mean	0.090	-0.575	-0.077	0.129	0.296	0.614
Pseudo High	518	0	10	733	1000	1000
(p-Value)	0.518	0.000	0.010	0.733	1.000	1.000
Pseudo High-Low Mean	0.000	-0.002	0.000	0.000	0.000	-0.001
Pseudo High-Low	346	0	0	389	1000	1000
(p-Value)	0.346	0.000	0.000	0.389	1.000	1.000
Pseudo High-All Mean	0.000	0.005	0.002	0.000	0.000	-0.002
Pseudo High-All	518	0	10	733	1000	1000
(p-Value)	0.518	0.000	0.010	0.733	1.000	1.000

Table 8b: SOCSCORE All Firms (6,264)

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.004	-0.511	-0.148	0.014	0.173	0.481	0.524	6,264
SOCSCORE								
0-10	0.024	-0.639	-0.200	0.036	0.268	0.651	0.546	403
11-20	0.013	-0.577	-0.141	0.028	0.201	0.507	0.543	932
21-30	0.005	-0.553	-0.152	0.020	0.196	0.520	0.530	846
31-40	-0.002	-0.553	-0.171	0.017	0.186	0.516	0.527	649
41-50	0.005	-0.458	-0.151	-0.007	0.172	0.499	0.488	553
51-60	0.009	-0.436	-0.137	0.009	0.159	0.454	0.525	545
61-70	-0.016	-0.554	-0.152	0.006	0.154	0.427	0.516	508
71-80	-0.005	-0.487	-0.143	0.014	0.151	0.409	0.523	524
81-90	0.005	-0.412	-0.127	0.011	0.142	0.411	0.513	670
91-100	-0.004	-0.400	-0.133	0.010	0.151	0.383	0.521	634
Low Score (0-20)	0.016	-0.596	-0.159	0.030	0.221	0.551	0.544	1,335
High Score (81-100)	0.000	-0.406	-0.130	0.011	0.146	0.398	0.517	1,304
High-Low	-0.016	0.190	0.029	-0.020	-0.075	-0.153		2,639
High-All	-0.003	0.105	0.018	-0.003	-0.026	-0.084		

Resampling Result SOCSCORE	Mean	5%	25%	Median	75%	95%
Pseudo Low Mean	0.003	-0.504	-0.148	0.014	0.173	0.480
Pseudo Low	957	0	68	987	1000	1000
(p-Value)	0.957	0.000	0.068	0.987	1.000	1.000
Pseudo High Mean	0.004	-0.506	-0.147	0.015	0.173	0.483
Pseudo High	686	0	16	703	1000	1000
(p-Value)	0.686	0.000	0.016	0.703	1.000	1.000
Pseudo High-Low Mean	0.001	-0.002	0.001	0.001	0.001	0.002
Pseudo High-Low	932	0	4	983	1000	1000
(p-Value)	0.932	0.000	0.004	0.983	1.000	1.000
Pseudo High-All Mean	0.001	0.005	0.001	0.001	0.001	0.002
Pseudo High-All	686	0	16	703	1000	1000
(p-Value)	0.686	0.000	0.016	0.703	1.000	1.000

Table 8c: SOCSCORE All Firms (6,264)

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.188	-0.637	-0.046	0.224	0.467	0.895	0.719	6,264
SOCSCORE								
0-10	0.216	-0.773	-0.143	0.210	0.558	1.249	0.690	403
11-20	0.180	-0.685	-0.075	0.213	0.489	0.899	0.698	932
21-30	0.202	-0.656	-0.049	0.260	0.514	0.932	0.722	846
31-40	0.162	-0.747	-0.078	0.206	0.477	0.932	0.686	649
41-50	0.210	-0.615	-0.051	0.238	0.471	0.949	0.727	553
51-60	0.196	-0.549	-0.042	0.245	0.477	0.778	0.716	545
61-70	0.153	-0.705	-0.082	0.226	0.458	0.828	0.703	508
71-80	0.171	-0.618	-0.028	0.206	0.438	0.853	0.727	524
81-90	0.200	-0.451	-0.002	0.227	0.418	0.804	0.748	670
91-100	0.190	-0.441	0.020	0.216	0.431	0.690	0.765	634
Low Score (0-20)	0.191	-0.712	-0.096	0.212	0.510	1.005	0.696	1,335
High Score (81-100)	0.195	-0.446	0.009	0.221	0.424	0.749	0.756	1,304
High-Low	0.004	0.265	0.105	0.009	-0.086	-0.256		2,639
High-All	0.007	0.191	0.055	-0.003	-0.043	-0.147		

Resampling Result	Mean	5%	25%	Median	75%	95%		
SOCSCORE								
Pseudo Low Mean	0.188	-0.633	-0.047	0.225	0.467	0.892		
Pseudo Low	606	13	1	106	1000	999		
(p-Value)	0.606	0.013	0.001	0.106	1.000	0.999		
Pseudo High Mean	0.188	-0.633	-0.046	0.226	0.468	0.895		
Pseudo High	299	0	0	662	1000	1000		
(p-Value)	0.299	0.000	0.000	0.662	1.000	1.000		
Pseudo High-Low Mean	0.001	0.000	0.002	0.001	0.001	0.003		
Pseudo High-Low	415	0	0	309	1000	1000		
(p-Value)	0.415	0.000	0.000	0.309	1.000	1.000		
Pseudo High-All Mean	0.001	0.005	0.001	0.002	0.001	0.000		
Pseudo High-All	299	0	0	662	1000	1000		
(p-Value)	0.299	0.000	0.000	0.662	1.000	1.000		

Table 8d: SOCSCORE All Firms (6,264)

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.011	-0.699	-0.188	0.034	0.239	0.655	0.544	6,264
SOCSCORE								
0-10	0.070	-0.875	-0.224	0.086	0.361	0.986	0.568	403
11-20	0.006	-0.725	-0.196	0.045	0.265	0.667	0.543	932
21-30	0.014	-0.753	-0.214	0.047	0.278	0.696	0.556	846
31-40	-0.012	-0.756	-0.239	0.030	0.240	0.742	0.533	649
41-50	0.021	-0.655	-0.168	0.014	0.229	0.679	0.542	553
51-60	0.008	-0.628	-0.196	0.023	0.248	0.596	0.532	545
61-70	-0.024	-0.728	-0.227	0.032	0.209	0.575	0.530	508
71-80	0.019	-0.609	-0.164	0.046	0.237	0.622	0.555	524
81-90	0.026	-0.517	-0.133	0.032	0.199	0.580	0.545	670
91-100	0.001	-0.484	-0.155	0.022	0.179	0.468	0.538	634
Low Score (0-20)	0.025	-0.770	-0.204	0.058	0.294	0.763	0.551	1,335
High Score (81-100)	0.014	-0.501	-0.144	0.027	0.189	0.526	0.541	1,304
High-Low	-0.011	0.269	0.060	-0.030	-0.104	-0.238		2,639
High-All	0.003	0.198	0.044	-0.007	-0.050	-0.129		

Resampling Result	Mean	5%	25%	Median	75%	95%
SOCSCORE						
Pseudo Low Mean	0.011	-0.691	-0.188	0.034	0.238	0.656
Pseudo Low	889	7	113	997	1000	1000
(p-Value)	0.889	0.007	0.113	0.997	1.000	1.000
Pseudo High Mean	0.011	-0.690	-0.187	0.034	0.238	0.654
Pseudo High	407	0	0	747	1000	1000
(p-Value)	0.407	0.000	0.000	0.747	1.000	1.000
Pseudo High-Low Mean	0.000	0.001	0.001	0.000	0.000	-0.002
Pseudo High-Low	770	0	0	984	1000	1000
(p-Value)	0.770	0.000	0.000	0.984	1.000	1.000
Pseudo High-All Mean	0.000	0.010	0.001	0.000	-0.001	0.000
Pseudo High-All	407	0	0	747	1000	1000
(p-Value)	0.407	0.000	0.000	0.747	1.000	1.000

5.1.1. LA4CTYUS Index: EESG Social

The average low SOSCORE firm earns its investors 8.4% (one-year return), 1.6% (one-year market adjusted return), 19.1% (two-year return), 2.5% (two-year market adjusted return), average return rates in the period 2002-2013. Of the 6,264 observations 403 firm years achieve a SOSCORE between 0-10, and 932 a score between 11-20, totalling 1,335/6,264 or 21.3% of the index. Similar to the environmental and governmental portfolios the SOSCORE has difficulties outperforming the pseudo portfolios. For the 5% percentile the empirical portfolio is able to significantly outperform random selection. This is also true for the 25% percentile regarding one- and two-year market returns. All other hypotheses reject the null hypothesis and concludes that randomly selecting firm observations in pseudo portfolios significantly outperforms choosing firms on SOSCORE.

High SOSCORE firms create an average return of 8.9% (one-year market return), 0.000% (one-year market adjusted return), 19.5% (two-year market return) and 1.4% (two-year market adjusted return). 670 firm observations achieve a score between 81-90 while 634 firms perform in the 91-100 range, totalling 1,304/6,264 or 20.8% of the index. The high score results show similar patterns to low scores. Choosing stocks based on high SOSCORE is able to earn an investor significant returns for the 5%- and 25%-percentiles. However, on average he/she is better of selecting the stocks blindfolded in about 70% of the instances. High SOCSCORE firm returns are noticeably characterised by more positive kurtosis, a steeper curve, than low SOCSCORE firms. This indicates that initiating a buy-and-hold strategy longing high social csr scoring firms reduces negative returns, but at the same reducing positive returns.

The buy-and-hold strategy fails to deliver above average returns. In figures the high-low strategy earns its investor 0.5% (one-year return), -1.6% (one-year market adjusted return), -0.4% (two-year return) and -1.1% (two-year market adjusted return). Evaluating the pseudo high-low portfolios, the signals reflect the findings in regards to high scoring firms. The empirical portfolio is able to outperform random selection in regards to 5% percentile and 25% percentile returns. Investors are likely to receive higher rate of returns by picking their stocks randomly.

Last, the pseudo high portfolios less the index averages are examined. Results are similar to those of the high-low portfolios. The high-all strategy earns its investor an average return of -

0.000% (one-year return), -0.3% (one-year market adjusted return), 0.7% (two-year return), -0.3% (two-year market adjusted return).

The SOCSCORE variable is, in the majority of the cases, unable to select winners from losers by using a buy-and-hold strategy shorting low scoring firms and longing high scoring firms. As no group show negative returns across return rates, shorting a stock is unadvised in the case that the stock increases in value. The range with the highest return rates are 41-50 and 51-60 for one-year market returns with 10.2% and 10.4% respectively. For market-adjusted returns the 0-10 range provides the highest rate of returns with 2.4% and 7.0% for one-year market-adjusted and two-year market-adjusted returns.

The 11-40 range produces the highest returns with an average return of 13.5% (one-year return), 5.91% (one-year market adjusted return), 22.2% (two-year return), and 11.0% (two-year market adjusted return). More specifically range 31-40 delivers strong performance at 15.9% (one-year return), 7.6% (one-year market adjusted return), 33.3% (two-year return) and 13.4% (two-year market adjusted return), well above the index.

Table 9a: aEESG All Firms (6,264)

One-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.089	-0.579	-0.078	0.129	0.296	0.616	0.671	6,264
aEESG								
0-10	0.027	-0.761	-0.263	0.155	0.311	0.678	0.714	7
11-20	0.103	-0.668	-0.094	0.156	0.327	0.689	0.678	121
21-30	0.064	-0.683	-0.164	0.096	0.337	0.757	0.598	582
31-40	0.078	-0.691	-0.102	0.128	0.316	0.680	0.658	1,106
41-50	0.103	-0.571	-0.075	0.141	0.316	0.657	0.663	1,060
51-60	0.086	-0.546	-0.087	0.122	0.293	0.591	0.657	821
61-70	0.099	-0.563	-0.039	0.136	0.291	0.594	0.726	696
71-80	0.094	-0.556	-0.058	0.131	0.285	0.577	0.677	643
81-90	0.088	-0.456	-0.044	0.127	0.253	0.491	0.699	818
91-100	0.104	-0.376	-0.030	0.115	0.270	0.469	0.700	410
Low Score (0-20)	0.099	-0.673	-0.103	0.156	0.326	0.688	0.680	128
High Score (81-100)	0.093	-0.429	-0.040	0.123	0.259	0.484	0.700	1,228
High-Low	-0.005	0.243	0.063	-0.033	-0.067	-0.205		1,356
High-All	0.004	0.150	0.039	-0.006	-0.037	-0.133		

Resampling Result aEESG	Mean	5%	25%	Median	75%	95%		
Pseudo Low Mean	0.089	-0.574	-0.078	0.128	0.296	0.614		
Pseudo Low	814	2	31	1000	999	997		
(p-Value)	0.814	0.002	0.031	1.000	0.999	0.997		
Pseudo High Mean	0.091	-0.555	-0.074	0.129	0.297	0.611		
Pseudo High	473	131	231	592	898	981		
(p-Value)	0.473	0.131	0.231	0.592	0.898	0.981		
Pseudo High-Low Mean	0.001	0.019	0.004	0.000	0.001	-0.003		
Pseudo High-Low	583	18	90	874	985	999		
(p-Value)	0.583	0.018	0.090	0.874	0.985	0.999		
Pseudo High-All Mean	0.002	0.025	0.004	0.000	0.001	-0.005		
Pseudo High-All	473	131	231	592	898	981		
(p-Value)	0.473	0.131	0.231	0.592	0.898	0.981		

Table 9b: aEESG All Firms (6,264)

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.004	-0.511	-0.148	0.014	0.173	0.481	0.524	6,264
aEESG								
0-10	-0.094	-0.763	-0.266	-0.103	0.159	0.468	0.429	7
11-20	0.034	-0.614	-0.116	0.066	0.250	0.621	0.595	121
21-30	-0.017	-0.695	-0.209	-0.004	0.212	0.588	0.498	582
31-40	-0.001	-0.625	-0.156	0.014	0.196	0.542	0.523	1,106
41-50	0.019	-0.491	-0.151	0.021	0.200	0.533	0.533	1,060
51-60	0.005	-0.457	-0.152	0.013	0.170	0.439	0.523	821
61-70	0.005	-0.530	-0.143	0.028	0.170	0.449	0.547	696
71-80	0.009	-0.405	-0.129	0.006	0.154	0.413	0.510	643
81-90	-0.006	-0.390	-0.126	0.005	0.122	0.358	0.517	818
91-100	0.004	-0.351	-0.134	0.013	0.152	0.383	0.520	410
Low Score (0-20)	0.027	-0.623	-0.124	0.057	0.245	0.612	0.586	128
High Score (81-100)	-0.002	-0.377	-0.129	0.008	0.132	0.366	0.518	1,228
High-Low	-0.030	0.246	-0.005	-0.049	-0.113	-0.246		1,356
High-All	-0.006	0.134	0.019	-0.006	-0.040	-0.115		

Resampling Result	Mean	5%	25%	Median	75%	95%		
aEESG								
Pseudo Low Mean	0.003	-0.497	-0.147	0.014	0.172	0.466		
Pseudo Low	817	101	785	968	990	977		
(p-Value)	0.817	0.101	0.785	0.968	0.990	0.977		
Pseudo High Mean	0.004	-0.505	-0.147	0.014	0.173	0.482		
Pseudo High	769	0	23	793	1000	1000		
(p-Value)	0.769	0.000	0.023	0.793	1.000	1.000		
Pseudo High-Low Mean	0.001	-0.008	0.000	0.000	0.001	0.015		
Pseudo High-Low	861	15	553	977	999	1000		
(p-Value)	0.861	0.015	0.553	0.977	0.999	1.000		
Pseudo High-All Mean	0.000	0.006	0.000	0.001	0.000	0.000		
Pseudo High-All	769	0	23	793	1000	1000		
(p-Value)	0.769	0.000	0.023	0.793	1.000	1.000		

Table 9c: aEESG All Firms (6,264)

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.188	-0.637	-0.046	0.224	0.467	0.895	0.719	6,264
aEESG								
0-10	0.423	-0.589	0.248	0.595	0.800	0.998	0.714	7
11-20	0.309	-0.553	0.062	0.304	0.552	1.274	0.785	121
21-30	0.181	-0.781	-0.139	0.210	0.553	1.098	0.686	582
31-40	0.169	-0.744	-0.092	0.220	0.475	0.972	0.689	1,106
41-50	0.185	-0.652	-0.070	0.228	0.494	0.937	0.706	1,060
51-60	0.173	-0.637	-0.061	0.220	0.450	0.812	0.706	821
61-70	0.206	-0.633	-0.027	0.250	0.490	0.866	0.728	696
71-80	0.192	-0.563	-0.041	0.216	0.441	0.827	0.723	643
81-90	0.191	-0.448	0.001	0.225	0.418	0.775	0.751	818
91-100	0.201	-0.328	0.046	0.219	0.419	0.663	0.795	410
Low Score (0-20)	0.315	-0.555	0.072	0.320	0.565	1.259	0.781	128
High Score (81-100)	0.194	-0.408	0.016	0.223	0.418	0.738	0.765	1,228
High-Low	-0.121	0.146	-0.056	-0.097	-0.147	-0.521		1,356
High-All	0.007	0.229	0.062	-0.001	-0.050	-0.157		

Resampling Result aEESG	Mean	5%	25%	Median	75%	95%
Pseudo Low Mean	0.189	-0.608	-0.044	0.226	0.466	0.884
Pseudo Low	997	634	985	987	989	999
(p-Value)	0.997	0.634	0.985	0.987	0.989	0.999
Pseudo High Mean	0.188	-0.633	-0.046	0.225	0.467	0.893
Pseudo High	301	0	0	564	1000	1000
(p-Value)	0.301	0.000	0.000	0.564	1.000	1.000
Pseudo High-Low Mean	-0.001	-0.024	-0.001	-0.001	0.002	0.008
Pseudo High-Low	994	118	818	987	1000	1000
(p-Value)	0.994	0.118	0.818	0.987	1.000	1.000
Pseudo High-All Mean	0.000	0.005	0.001	0.001	0.000	-0.003
Pseudo High-All	301	0	0	564	1000	1000
(p-Value)	0.301	0.000	0.000	0.564	1.000	1.000

Table 9d: aEESG All Firms (6,264)

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.011	-0.699	-0.188	0.034	0.239	0.655	0.544	6,264
aEESG								
0-10	0.164	-0.742	0.086	0.350	0.438	0.674	0.714	7
11-20	0.133	-0.688	-0.134	0.157	0.354	0.887	0.628	121
21-30	-0.001	-0.951	-0.256	0.057	0.309	0.860	0.540	582
31-40	-0.006	-0.784	-0.234	0.027	0.254	0.751	0.533	1,106
41-50	0.013	-0.720	-0.183	0.040	0.283	0.704	0.548	1,060
51-60	0.003	-0.689	-0.200	0.020	0.232	0.634	0.533	821
61-70	0.025	-0.651	-0.180	0.042	0.255	0.654	0.557	696
71-80	0.030	-0.499	-0.164	0.047	0.220	0.574	0.565	643
81-90	0.002	-0.517	-0.148	0.016	0.188	0.518	0.520	818
91-100	0.011	-0.438	-0.147	0.026	0.176	0.502	0.554	410
Low Score (0-20)	0.134	-0.691	-0.122	0.168	0.359	0.876	0.633	128
High Score (81-100)	0.005	-0.491	-0.148	0.019	0.184	0.513	0.531	1,228
High-Low	-0.129	0.200	-0.026	-0.148	-0.174	-0.363		1,356
High-All	-0.006	0.209	0.040	-0.015	-0.055	-0.142		

Resampling Result aEESG	Mean	5%	25%	Median	75%	95%
Pseudo Low Mean	0.011	-0.666	-0.189	0.033	0.238	0.642
Pseudo Low	1000	410	945	1000	997	985
(p-Value)	1.000	0.410	0.945	1.000	0.997	0.985
Pseudo High Mean	0.011	-0.689	-0.187	0.034	0.239	0.658
Pseudo High	713	0	0	931	1000	1000
(p-Value)	0.713	0.000	0.000	0.931	1.000	1.000
Pseudo High-Low Mean	0.000	-0.023	0.002	0.002	0.001	0.015
Pseudo High-Low	1000	41	722	1000	1000	997
(p-Value)	1.000	0.041	0.722	1.000	1.000	0.997
Pseudo High-All Mean	0.000	0.010	0.001	0.001	0.000	0.003
Pseudo High-All	713	0	0	931	1000	1000
(p-Value)	0.713	0.000	0.000	0.931	1.000	1.000

Table 10a: aESG All Firms (6,264)

One Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.089	-0.579	-0.078	0.129	0.296	0.616	0.671	6,264
aESG								
0-10	-0.113	-0.848	-0.490	-0.036	0.133	0.652	0.500	8
11-20	0.087	-0.591	-0.133	0.148	0.350	0.679	0.644	135
21-30	0.090	-0.630	-0.131	0.118	0.331	0.739	0.625	528
31-40	0.094	-0.627	-0.090	0.140	0.321	0.632	0.659	1,352
41-50	0.081	-0.615	-0.080	0.118	0.299	0.644	0.667	965
51-60	0.103	-0.533	-0.061	0.145	0.288	0.623	0.675	683
61-70	0.073	-0.591	-0.068	0.118	0.296	0.571	0.679	604
71-80	0.106	-0.499	-0.033	0.137	0.281	0.645	0.704	587
81-90	0.080	-0.519	-0.065	0.125	0.269	0.526	0.688	909
91-100	0.093	-0.461	-0.032	0.117	0.265	0.496	0.688	493
Low Score (0-20)	0.076	-0.606	-0.153	0.137	0.338	0.677	0.636	143
High Score (81-100)	0.085	-0.499	-0.053	0.122	0.267	0.516	0.688	1,402
High-Low	0.009	0.107	0.099	-0.015	-0.071	-0.162		1,545
High-All	-0.004	0.080	0.025	-0.007	-0.029	-0.101		

Resampling Result aESG	Mean	5%	25%	Median	75%	95%
Pseudo Low Mean	0.089	-0.575	-0.078	0.128	0.296	0.613
Pseudo Low	71	182	0	914	1000	997
(p-Value)	0.071	0.182	0.000	0.914	1.000	0.997
Pseudo High Mean	0.089	-0.558	-0.078	0.127	0.294	0.603
Pseudo High	549	301	295	601	829	908
(p-Value)	0.549	0.301	0.295	0.601	0.829	0.908
Pseudo High-Low Mean	0.000	0.017	0.000	-0.001	-0.002	-0.010
Pseudo High-Low	381	221	8	708	988	990
(p-Value)	0.381	0.221	0.008	0.708	0.988	0.990
Pseudo High-All Mean	0.000	0.021	0.001	-0.001	-0.002	-0.013
Pseudo High-All	549	301	295	601	829	908
(p-Value)	0.549	0.301	0.295	0.601	0.829	0.908

Table 10b: aESG All Firms (6,264)

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.004	-0.511	-0.148	0.014	0.173	0.481	0.524	6,264
aESG								
0-10	-0.221	-0.919	-0.565	-0.129	0.017	0.464	0.250	8
11-20	0.042	-0.528	-0.129	0.081	0.261	0.523	0.600	135
21-30	-0.010	-0.615	-0.197	0.003	0.212	0.545	0.502	528
31-40	0.018	-0.565	-0.151	0.025	0.209	0.545	0.544	1,352
41-50	0.003	-0.526	-0.151	0.010	0.182	0.522	0.516	965
51-60	0.015	-0.479	-0.142	0.021	0.168	0.477	0.543	683
61-70	-0.019	-0.532	-0.157	-0.006	0.157	0.419	0.495	604
71-80	0.011	-0.425	-0.131	0.026	0.169	0.421	0.540	587
81-90	-0.011	-0.436	-0.135	0.003	0.126	0.373	0.509	909
91-100	0.002	-0.374	-0.136	0.007	0.149	0.391	0.509	493
Low Score (0-20)	0.027	-0.550	-0.154	0.070	0.247	0.520	0.580	143
High Score (81-100)	-0.006	-0.414	-0.135	0.004	0.134	0.380	0.509	1,402
High-Low	-0.034	0.135	0.018	-0.065	-0.113	-0.140		1,545
High-All	-0.010	0.097	0.013	-0.009	-0.038	-0.102		

Resampling Result	Mean	5%	25%	Median	75%	95%		
aESG								
Pseudo Low Mean	0.004	-0.495	-0.147	0.014	0.173	0.470		
Pseudo Low	803	217	385	996	993	774		
(p-Value)	0.803	0.217	0.385	0.996	0.993	0.774		
Pseudo High Mean	0.004	-0.504	-0.147	0.014	0.173	0.481		
Pseudo High	909	0	53	935	1000	1000		
(p-Value)	0.909	0.000	0.053	0.935	1.000	1.000		
Pseudo High-Low Mean	-0.001	-0.009	-0.001	0.000	0.000	0.011		
Pseudo High-Low	889	61	238	998	1000	982		
(p-Value)	0.889	0.061	0.238	0.998	1.000	0.982		
Pseudo High-All Mean	0.000	0.008	0.000	0.001	0.000	0.000		
Pseudo High-All	909	0	53	935	1000	1000		
(p-Value)	0.909	0.000	0.053	0.935	1.000	1.000		

Table 10c: aESG All Firms (6,264)

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.188	-0.637	-0.046	0.224	0.467	0.895	0.719	6,264
aESG								
0-10	0.178	-1.043	-0.331	0.405	0.831	1.003	0.625	8
11-20	0.286	-0.540	0.051	0.307	0.557	1.017	0.778	135
21-30	0.192	-0.765	-0.125	0.216	0.549	0.961	0.691	528
31-40	0.179	-0.707	-0.100	0.218	0.499	0.968	0.686	1,352
41-50	0.178	-0.669	-0.046	0.217	0.470	0.932	0.710	965
51-60	0.199	-0.592	-0.023	0.245	0.450	0.889	0.739	683
61-70	0.158	-0.763	-0.071	0.246	0.463	0.816	0.699	604
71-80	0.201	-0.600	-0.037	0.214	0.474	0.863	0.731	587
81-90	0.192	-0.467	-0.012	0.229	0.430	0.782	0.739	909
91-100	0.196	-0.344	0.031	0.211	0.406	0.700	0.783	493
Low Score (0-20)	0.280	-0.568	0.030	0.313	0.573	1.016	0.769	143
High Score (81-100)	0.194	-0.423	0.003	0.223	0.422	0.753	0.755	1,402
High-Low	-0.086	0.145	-0.026	-0.090	-0.151	-0.263		1,545
High-All	0.006	0.214	0.050	-0.001	-0.046	-0.142		

Resampling Result aESG	Mean	5%	25%	Median	75%	95%		
Pseudo Low Mean	0.186	-0.610	-0.046	0.224	0.465	0.875		
Pseudo Low	990	608	933	989	997	920		
(p-Value)	0.990	0.608	0.933	0.989	0.997	0.920		
Pseudo High Mean	0.188	-0.635	-0.046	0.225	0.467	0.894		
Pseudo High	304	0	2	557	1000	1000		
(p-Value)	0.304	0.000	0.002	0.557	1.000	1.000		
Pseudo High-Low Mean	0.002	-0.025	0.000	0.001	0.002	0.019		
Pseudo High-Low	979	94	666	993	1000	987		
(p-Value)	0.979	0.094	0.666	0.993	1.000	0.987		
Pseudo High-All Mean	0.000	0.003	0.000	0.001	0.000	-0.001		
Pseudo High-All	304	0	2	557	1000	1000		
(p-Value)	0.304	0.000	0.002	0.557	1.000	1.000		

Table 10d: aESG All Firms (6,264)

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.011	-0.699	-0.188	0.034	0.239	0.655	0.544	6,264
aESG								
0-10	0.003	-0.949	-0.474	0.174	0.551	0.694	0.500	8
11-20	0.124	-0.592	-0.125	0.167	0.358	0.735	0.652	135
21-30	-0.009	-0.907	-0.279	0.035	0.277	0.694	0.528	528
31-40	0.012	-0.740	-0.220	0.050	0.284	0.771	0.547	1,352
41-50	0.013	-0.724	-0.183	0.022	0.244	0.711	0.535	965
51-60	0.021	-0.708	-0.173	0.041	0.241	0.645	0.568	683
61-70	-0.019	-0.744	-0.218	0.031	0.230	0.566	0.531	604
71-80	0.029	-0.543	-0.182	0.035	0.237	0.652	0.538	587
81-90	0.006	-0.541	-0.147	0.033	0.188	0.536	0.541	909
91-100	0.009	-0.455	-0.153	0.018	0.181	0.505	0.533	493
Low Score (0-20)	0.117	-0.612	-0.145	0.167	0.369	0.733	0.643	143
High Score (81-100)	0.007	-0.511	-0.149	0.028	0.185	0.525	0.539	1,402
High-Low	-0.110	0.101	-0.004	-0.140	-0.184	-0.208		1,545
High-All	-0.004	0.188	0.038	-0.006	-0.054	-0.130		

Resampling Result	Mean	5%	25%	Median	75%	95%		
aESG								
Pseudo Low Mean	0.011	-0.669	-0.188	0.034	0.237	0.644		
Pseudo Low	997	689	838	1000	1000	827		
(p-Value)	0.997	0.689	0.838	1.000	1.000	0.827		
Pseudo High Mean	0.011	-0.669	-0.187	0.034	0.239	0.644		
Pseudo High	656	73	0	759	1000	891		
(p-Value)	0.656	0.073	0.000	0.759	1.000	0.891		
Pseudo High-Low Mean	0.000	0.000	0.000	0.000	0.001	0.000		
Pseudo High-Low	997	0	519	1000	1000	1000		
(p-Value)	0.997	0.000	0.519	1.000	1.000	1.000		
Pseudo High-All Mean	0.000	0.030	0.000	0.000	0.000	-0.011		
Pseudo High-All	656	73	0	759	1000	891		
(p-Value)	0.656	0.073	0.000	0.759	1.000	0.891		

5.1.3. LA4CTYUS Index: Average EESG and Average ESG

"Winners and Losers"

By applying equal weight to each EESG and ESG variable an investor can examine the combined effect of the buy-and-hold strategy when the decision to short or long is taken based on a csr + economic score or csr score.

Of the 6,264 observations from 2002-2013 seven firm years achieve an EESG between 0-10 and 121 a score between 11-20, totalling 128/6,264 or 2.0% of the index. ESG observations include eight firms achieving 0-10 and 135 companies scoring in the range 11-20, totalling 142/6,264 or 2.3% of the index. Firms scoring in the range of 0-20 are considered low EESG firms and are shorted five months after fiscal year end for 12 or 24 months. The average low EESG firm earns its investors 9.9% (one-year return), 2.7% (one-year market adjusted return), 31.5% (two-year return) and 13.4% (two-year market adjusted return), average return rates in the period 2002-2013. Low ESG firms achieves a return of 7.6% (one-year return), 2.7% (one-year market adjusted return), 28.0% (two-year return) and 11.4% (two-year market adjusted return). Since the economic score displays better performance than the csr scores individually the combination of weighted averages show a similar result.

EESG score firms in the range of 81-90 total 818 and firms scoring between 91-100 410, totalling 1,228, or 19.6% of the index. In the regards to ESG firms the number of companies in the range between 81-90 is 909 and firms scoring 91-100 493, totalling 1,402 or 22.4% of the index. These firms are considered high EESG and ESG firms and are through the buy-and-hold strategy shorted for 12 or 24 months five months after fiscal year end. High EESG firms create an average return of 9.3% (one-year market return), -0.2% (one-year market adjusted return), 19.4% (two-year market return) and 0.5% (two-year market adjusted return), while high ESG firms deliver an average return of 8.5% (one-year market return), -0.6% (one-year market adjusted return), 0.6% (two-year market return) and 0.7% (two-year market adjusted return.

Due to the empirical low EESG and ESG portfolios showing higher returns than high EESG and ESG firms, shorting low EESG and ESG firms and longing high EESG and ESG firms is devastating to an investor. This is reflected in pseudo portfolios where, in regards to means the empirical portfolios are beaten by random selection in over 50 of the 1,000 cases resulting in the rejection of the null hypothesis. The rejection of the null is true for the pseudo low, pseudo high, pseudo high-low and pseudo high-all portfolio means.

Last, in regards to the index a summary including main results, winners and losers is presented for one-year market returns and one-year market adjusted returns.

Table 11: All Firms Summary FSCORE, EESG, Winners and Losers

	One-Year Market Return				One-Year Market Adjusted Return		
Rank	Variable	Mean Return	n	Rank	Variable	Mean Return	n
-	Index	0.089	6,264	-	Index	0.004	6,264

Low Score

Rank	Variable	Mean Return	n	Rank	Variable	Mean Return	n
1	FSCORE	-0.240*	122	1	FSCORE	-0.276*	122
2	ECNSCORE	0.029*	904	2	ECNSCORE	-0.041*	904
3	CGVSCORE	0.075*	102	3	ENVSCORE	0.006	2,270
4	aESG	0.076	143	4	CGVSCORE	0.012	102
5	ENVSCORE	0.082	2,270	5	SOCSCORE	0.016	1,335
6	SOCSCORE	0.084	1,335	6	aESG	0.027	143
7	aEESG	0.099	128	6	aEESG	0.027	128

High Score

Rank	Variable	Mean Return	n	Rank	Variable	Mean Return	n
1	FSCORE	0.150*	943	1	FSCORE	0.057*	943
2	ECNSCORE	0.103	1,615	2	ECNSCORE	0.017	1,615
3	aEESG	0.093	1,228	3	SOCSCORE	0.000	1,304
4	ENVSCORE	0.089	1,536	4	aEESG	-0.002	1,228
4	SOCSCORE	0.089	1,304	5	CGVSCORE	-0.006	2,735
6	aESG	0.085	1,402	5	aESG	-0.006	1,402
7	CGVSCORE	0.077	2,735	7	ENVSCORE	-0.007	1,536

Losers

Rank	Variable	Mean Return	n	Rank	Variable	Mean Return	n
1	FSCORE (2)	-0.268	94	1	FSCORE (2)	-0.284	94
2	FSCORE (1)	-0.147	28	2	FSCORE (1)	-0.251	28
3	aESG (0-10)	-0.113	8	3	aESG (0-10)	-0.221	8
4	FSCORE (3)	-0.056	235	4	FSCORE (3)	-0.113	235
5	CGVSCORE (0-10)	-0.049	25	5	CGVSCORE (0-10)	-0.097	25
6	ECNSCORE (0-10)	0.009	346	6	aEESG (0-10)	-0.094	7
6	FSCORE (4)	0.009	590	7	FSCORE (4)	-0.062	590

Winners

Rank	Variable	Mean Return	n	Rank	Variable	Mean Return	n
1	CGVSCORE (31-40)	0.159	113	1	CGVSCORE (31-40)	0.076	113
2	FSCORE (8)	0.154	811	2	FSCORE (8)	0.057	811
3	FSCORE (7)	0.146	1,473	3	FSCORE (9)	0.055	132
4	FSCORE (9)	0.131	132	4	FSCORE (7)	0.051	1,473
5	ECNSCORE (51-60)	0.126	644	5	CGVSCORE (11-20)	0.047	77
5	CGVSCORE (41-50)	0.126	261	6	CGVSCORE (21-30)	0.046	75
7	ECNSCORE (61-70)	0.123	652	7	aESG (11-20)	0.042	135

* Significant result. One-sided resampling test. Critical value 50. Rejects the null hypothesis if p-value > 0.05.
Tests have been conducted for low score, high score, high-low, high-all and high-index portfolios.

5.1.4.   Summary: LA4CTYUS Index

From 2002-2013 the one-year market return index yields 8.9%, while the one-year market adjusted return yields 0.4%. The low score list ranks all low score portfolios from lowest to highest returns. Among the low score variables FSCORE is able to provide significant negative returns of -24.0% and -27.6% for one-year and one-year market adjusted returns. Able to provide the lowest significant returns FSCORE is considered the rank one variable of the seven. In second place ECNSCORE yields 2.9% and -4.1% for one-year and one-year market adjusted returns, also significant. Third, and last significant finding is CGVSCORE for one-year market returns, with a return of 7.5%. Rank three one-year market adjusted return is ENVSCORE with a return of 0.6% Although significant, the low FSCORE is the only recommended variable for shorting stocks. However, the low number of observations may result in years lacking low FSCORE observations.

The high score list ranks all high score portfolios from highest to lowest returns. High FSCORE firms show significant positive returns for one-year and one-year market adjusted returns of 15.0% and 5.7% respectively. This puts the FSCORE variable at rank one, above ECNSCORE 10.3% and 1.7%. Third is aEESG for one-year market return and SOCSCORE for one-year market adjusted return with 9.3% and 0.00% respectively. Similar to low score findings, the high FSCORE variable is delivering significant positive returns. With a larger number of observations (943) investors are less likely to experience shortage of high FSCORE firms.

Low FSCORE firms dominate the losers bracket[43]. The lowest aEESG (0-10) variable ranks third, but with a low sample size of eight investors are better off looking elsewhere for more common indicators. The CGVSCORE (0-10) is also able to provide negative returns at the cost of low sample size.

The CGVSCORE (31-40) is the unexpected winner[44] with a mean return of 15.9% and 7.6% for one-year and one-year market adjusted returns. At the cost of a low sample size investors are advised to long firms in the 31-40 CGVSCORE range when available. Another interesting result is the performance of FSCORE seven with a pleasant sample size of 1,473 it is able to outperform FSCORE nine with the small sample size of 132 for one-year market returns. However, the situation is changed in regards to one-year market adjusted returns where the

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[43] Losers exclude low and high score portfolios and focus on individual variables and ranges.
[44] Winners exclude low and high score portfolios and focus on individual variables and ranges.

tables are turned. On the other hand, FSCORE seven and nine must find themselves both beaten by FSCORE eight in both cases. The winners list is further populated by non-high score variables, such as ECNSCORE (51-60) (61-70) and CGCSCORE (21-30) (41-50). Even low scores such as CGVSCORE (11-20) and aESG (11-20) made the winners list.

Theoretically, by longing winners and shorting losers an investor can achieve a return of 42.7% or 36.0% for one-year and one-year market adjusted returns. Less the index mean return the results are 33.8% and 35.6%. Higher negative returns signals that the low FSCORE variable includes smaller firms, as market adjusted return rates skews investments towards larger firms.

By breaking the index into portfolios based on book-to-market ratio an investor may discover variables yielding higher or lower returns.

5.2. Empirical Results: Low Book-to-Market Firms

Table 12: Financial Characteristics: Low (Percentile 0-33) Book-to-Market Firms (2,141 Firm Year Observations between 2002-2013)

	Mean	Median	Standard Deviation	Proportion with Positive Signal
MVE	21931.087	8040.297	41670.165	1.000
TA	10994.278	4248.894	19475.191	1.000
BM-ratio	0.142	0.184	0.263	0.931
F1 ROA	0.109	0.108	0.145	0.919
F2 CFO	0.154	0.151	0.148	0.955
F3 cROA	0.009	0.005	0.141	0.574
F4 ACC	0.045	0.039	0.037	1.000
F5 cLEV	0.007	0.000	0.115	0.388
F6 cLIQ	-0.024	0.007	1.006	0.510
F7 EQ	-0.909	-0.044	78.026	0.489
F8 cMAR	0.720	0.270	19.739	0.571
F9 cTURN	-0.010	0.001	0.239	0.506
ECNSCORE	56.455	59.550	28.990	1.000
ENVSCORE	43.529	28.400	32.210	1.000
CGVSCORE	72.670	76.910	17.701	1.000
SOCSCORE	47.729	42.160	29.111	1.000
Average EESG	55.096	50.845	22.572	1.000
Average ESG	54.642	48.217	23.221	1.000

The average firm in the low bm segment has a market value of equity of 21,931 million USD, while the median is 8,040 million USD and the standard deviation 41,670 million USD. The high standard deviation signals a large spread in firm size, negatively skewed, given the proportional signal of 1.000. Total assets average 10,994 million USD, with a median of 4,249 million USD and a standard deviation of 19,475 million USD. Again, with a proportional signal of 1.000, the distribution is expected to be negatively skewed. The average bm-ratio is 0.142, median 0.184 and standard deviation 0.263. F1 ROA average 0.109, F2 CFO 0.154, F3 cROA 0.09, F5 cLEV 0.007, F6 cLIQ -0.024, F7 EQ -0.909, F8 cMAR 0.720 and F9 cTURN -0.010.

The average low bm firm achieves the following EESG scores; ECNSCORE 56.46, EVNSCORE 43.53, CGVSCORE 72.67 and SOCSCORE of 47.73. The average EESG score is 55.10 and average ESG 54.64.

Next, Spearman's rho correlations for the low book-to-market segment is examined.

	F1 ROA	F2 CFO	F3 cROA	F4 ACC	F5 cLEV	F6 cLIQ	F7 EQ	F8 cMAR	F9 cTURN	FSCORE
Table 13: Spearman's rho Correlations: Low Book-to-Market Firms (Percentile 0-33) (2,141 Firm Years between 2002-2013)										
1YR RET	-.002	.028	.108**		.047*	.057**	-.193**	.129**	.034	.069**
2YR RET	-.040	-.019	.060**		.010	.052*	-.147**	.093**	-.014	.014
1YRMADJ	.009	.019	.115**		.049*	.037	-.145**	.093**	.081**	.089**
2YRMADJ	-.018	-.014	.090**		.028	.029	-.097**	.072**	.046*	.064**
F1 ROA	1.000	.735**	.112**		.140**	.059**	.224**	.076**	-.002	.404**
F2 CFO		1.000	.094**		.112**	.065**	.182**	.065**	.018	.345**
F3 cROA			1.000		.014	.010	-.013	.241**	.428**	.645**
F4 ACC										
F5 cLEV					1.000	-.132**	-.101**	.037	-.075**	.277**
F6 cLIQ						1.000	-.092**	.045*	-.063**	.284**
F7 EQ							1.000	-.025	-.048*	.298**
F8 cMAR								1.000	.023	.486**
F9 cTURN									1.000	.467**
FSCORE										1.000
ECNSCORE										
ENVSCORE										
CGVSCORE										
SOCSCORE										
Average EESG										
Average ESG										
**. Correlation is significant at the 0.01 level (2-tailed).										
*. Correlation is significant at the 0.05 level (2-tailed).										

Table 13 - continued

Spearman's rho Correlations: Low Book-to-Market Firms (Percentile 0-33) (2,141 Firm Years between 2002-2013)

	ECNSCORE	ENVSCORE	CGVSCORE	SOCSCORE	Average EESG	Average ESG
1YR RET	-.022	-.037	-.044[*]	-.062[**]	-.043[*]	-.054[*]
2YR RET	-.048[*]	-.020	-.066[**]	-.043[*]	-.047[*]	-.047[*]
1YRMADJ	-.025	-.045[*]	-.043[*]	-.079[**]	-.060[**]	-.071[**]
2YRMADJ	-.039	-.043[*]	-.063[**]	-.060[**]	-.062[**]	-.068[**]
F1 ROA	.295[**]	.106[**]	.052[*]	.143[**]	.198[**]	.123[**]
F2 CFO	.259[**]	.084[**]	.049[*]	.125[**]	.174[**]	.104[**]
F3 cROA	.095[**]	-.005	-.012	-.014	.025	-.013
F4 ACC						
F5 cLEV	.007	-.069[**]	-.076[**]	-.074[**]	-.061[**]	-.087[**]
F6 cLIQ	.056[**]	.025	.035	.022	.038	.028
F7 EQ	.163[**]	.112[**]	.124[**]	.176[**]	.176[**]	.165[**]
F8 cMAR	.043[*]	.000	-.016	-.016	.009	-.012
F9 cTURN	.046[*]	.002	.023	-.026	.019	-.003
FSCORE	.205[**]	.042	.042[*]	.048[*]	.111[**]	.051[*]
ECNSCORE	1.000	.513[**]	.450[**]	.638[**]	.811[**]	.619[**]
ENVSCORE		1.000	.583[**]	.753[**]	.839[**]	.883[**]
CGVSCORE			1.000	.591[**]	.725[**]	.773[**]
SOCSCORE				1.000	.898[**]	.915[**]
Average EESG					1.000	.955[**]
Average ESG						1.000

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

5.2.1. Low BM: Spearman's rho Correlations

The FSCORE variable performs a very low, but positive correlation of 0.069 and 0.014 with one-year and one-year market adjusted returns respectively. However, ranking third, beaten by F3 change in margins (rank 2) and F8 change in return on assets (rank 1). F8 achieves a correlation of 0.129 and 0.093 to one-year returns and one-year market adjusted returns, while F3 does 0.108 and 0.060 respectively. The FSCORE variables that show low, but significant correlations with one-year market returns and one-year market adjusted returns are F3 cROA, F5 cLEV, F6 cLIQ and F8 cMAR. F9 cTURN demonstrate significant correlation to 1YRMADJ, but insignificant, and lower correlation with 1YR RET. Correlations are lower for two-year market returns and two-year market adjusted returns. F7 equity displays a negative correlation to market and market adjusted returns of -0.193 and -0.147.

The ECNSCORE variable show an insignificant low negative correlation with one-year and one-year market adjusted returns. ENVSCORE also shows an insignificant and negative correlation with 1YR RET. However, the correlation is significant negative to 1YRMADJ. The remaining variables, CGVSCORE, SOCSCORE, aEESG and aESG display significant negative correlations with one-year and one-year market adjusted returns.

The social variable is the best performing ESG variable with correlations of -0.062 one-year market return and -0.079 one-year market adjusted return. Second, the governmental variable performs -0.044 and -0.043. Third, the environmental variable shows -0.037 and -045. Last, the economic variable shows as correlation of -0.22 and -0.025. Combining the environmental, social and governmental variables the average ESG correlation is -0.54 for one-year market returns and -0.071 for one-year market adjusted return rates beating the aEESG correlations of -0.043 and -0.060 respectively.

The negative correlations in regard to return rates raise scepticism towards the ESG variables and their ability to produce excess returns. It appears an increase in ESG variables significantly reduces return rates. The following chapter examines a buy-and-hold strategy longing high FSCORE (8-9) firms or EESG (81-100) firms and shorting low FSCORE (1-2) or EESG (0-20) firms.

Table 14a: FSCORE Low Book-to-Market Firms

One-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.179	-0.340	0.004	0.178	0.347	0.710	0.753	2,141
FSCORE								
0	-	-	-	-	-	-		0
1	0.270	-0.719	-0.005	0.088	0.816	1.302	0.700	10
2	0.051	-1.115	-0.497	-0.039	0.609	1.391	0.500	22
3	0.149	-0.444	-0.091	0.134	0.415	0.764	0.576	59
4	0.164	-0.506	-0.023	0.193	0.422	0.729	0.720	161
5	0.146	-0.345	-0.024	0.134	0.316	0.626	0.722	399
6	0.169	-0.329	0.015	0.180	0.330	0.633	0.765	545
7	0.202	-0.282	0.013	0.192	0.378	0.711	0.773	560
8	0.204	-0.300	0.122	0.196	0.359	0.779	0.792	341
9	0.239	-0.183	0.122	0.214	0.364	0.650	0.818	44
Low Score (1-2)	0.120	-0.991	-0.343	0.000	0.673	1.363	0.563	32
High Score (8-9)	0.208	-0.287	0.122	0.198	0.360	0.764	0.795	385
High-Low	0.089	0.704	0.466	0.197	-0.313	-0.599		417
High-All	0.030	0.053	0.118	0.020	0.013	0.054		
High-Index	0.119	0.293	0.201	0.069	0.064	0.148		

Resampling Result FSCORE	Mean	5%	25%	Median	75%	95%
Pseudo Low Mean	0.180	-0.293	0.014	0.180	0.343	0.657
Pseudo Low	157	2	0	1	1000	998
(p-Value)	0.157	0.002	0.000	0.001	1.000	0.998
Pseudo High Mean	0.178	-0.337	0.006	0.177	0.347	0.699
Pseudo High	20	97	0	86	223	80
(p-Value)	0.020	0.097	0.000	0.086	0.223	0.080
Pseudo High-Low Mean	-0.001	-0.044	-0.008	-0.002	0.005	0.042
Pseudo High-Low	72	1	0	0	1000	998
(p-Value)	0.072	0.001	0.000	0.000	1.000	0.998
Pseudo High-All Mean	0.000	0.002	0.002	-0.001	0.000	-0.010
Pseudo High-All	20	97	0	86	223	80
(p-Value)	0.020	0.097	0.000	0.086	0.223	0.080
Pseudo High-Index Mean	0.060	-0.630	-0.195	0.109	0.283	0.552
Pseudo High-Index	1	0	0	997	1000	1000
(p-Value)	0.001	0.000	0.000	0.997	1.000	1.000

Table 14b: FSCORE Low Book-to-Market Firms

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.061	-0.386	-0.103	0.044	0.219	0.545	0.581	2,141
FSCORE								
0	-	-	-	-	-	-		0
1	0.119	-0.866	-0.187	-0.088	0.806	1.064	0.400	10
2	-0.007	-0.827	-0.471	-0.117	0.413	1.121	0.455	22
3	0.048	-0.459	-0.214	0.011	0.299	0.574	0.508	59
4	0.051	-0.554	-0.146	0.062	0.245	0.556	0.553	161
5	0.008	-0.426	-0.140	0.002	0.173	0.454	0.504	399
6	0.060	-0.344	-0.086	0.046	0.185	0.529	0.591	545
7	0.085	-0.354	-0.099	0.074	0.246	0.536	0.627	560
8	0.088	-0.329	-0.067	0.065	0.227	0.577	0.607	341
9	0.122	-0.209	-0.028	0.092	0.273	0.518	0.659	44
Low Score (1-2)	0.032	-0.839	-0.382	-0.108	0.536	1.103	0.438	32
High Score (8-9)	0.092	-0.315	-0.062	0.068	0.232	0.570	0.613	385
High-Low	0.059	0.524	0.320	0.175	-0.304	-0.533		417
High-All	0.031	0.071	0.041	0.024	0.013	0.026		
High-Index	0.088	0.196	0.086	0.054	0.060	0.089		

Resampling Result	Mean	5%	25%	Median	75%	95%		
FSCORE								
Pseudo Low Mean	0.063	-0.353	-0.095	0.050	0.212	0.515		
Pseudo Low	263	3	0	2	1000	999		
(p-Value)	0.263	0.003	0.000	0.002	1.000	0.999		
Pseudo High Mean	0.061	-0.386	-0.103	0.045	0.217	0.545		
Pseudo High	12	8	1	25	145	242		
(p-Value)	0.012	0.008	0.001	0.025	0.145	0.242		
Pseudo High-Low Mean	-0.003	-0.033	-0.008	-0.005	0.005	0.029		
Pseudo High-Low	129	1	0	0	999	999		
(p-Value)	0.129	0.001	0.000	0.000	0.999	0.999		
Pseudo High-All Mean	0.000	-0.001	0.000	0.001	-0.002	0.000		
Pseudo High-All	12	8	1	25	145	242		
(p-Value)	0.012	0.008	0.001	0.025	0.145	0.242		
Pseudo High-Index Mean	-0.027	-0.582	-0.189	-0.009	0.157	0.456		
Pseudo High-Index	0	0	0	0	1000	1000		
(p-Value)	0.000	0.000	0.000	0.000	1.000	1.000		

Table 14c: FSCORE Low Book-to-Market Firms

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.264	-0.485	0.038	0.284	0.515	0.991	0.779	2,141
FSCORE								
0	-	-	-	-	-	-	-	0
1	0.400	-0.387	-0.044	0.297	0.625	1.451	0.700	10
2	0.353	-0.553	-0.137	0.317	0.817	1.613	0.682	22
3	0.194	-0.787	-0.132	0.313	0.653	1.047	0.661	59
4	0.293	-0.637	0.098	0.330	0.561	1.112	0.807	161
5	0.237	-0.470	0.030	0.238	0.471	0.910	0.774	399
6	0.256	-0.433	0.043	0.281	0.472	0.906	0.791	545
7	0.268	-0.452	0.038	0.304	0.523	0.950	0.766	560
8	0.282	-0.426	0.046	0.266	0.521	0.989	0.798	341
9	0.342	-0.174	0.114	0.297	0.539	1.072	0.818	44
Low Score (1-2)	0.367	-0.501	-0.108	0.311	0.757	1.562	0.688	32
High Score (8-9)	0.289	-0.398	0.054	0.270	0.523	0.998	0.800	385
High-Low	-0.078	0.104	0.162	-0.041	-0.234	-0.564		417
High-All	0.025	0.088	0.016	-0.014	0.009	0.008		
High-Index	0.101	0.240	0.100	0.045	0.056	0.103		

Resampling Result	Mean	5%	25%	Median	75%	95%		
FSCORE								
Pseudo Low Mean	0.268	-0.422	0.040	0.284	0.508	0.933		
Pseudo Low	891	295	69	641	995	994		
(p-Value)	0.891	0.295	0.069	0.641	0.995	0.994		
Pseudo High Mean	0.265	-0.472	0.038	0.283	0.512	0.983		
Pseudo High	135	99	268	755	335	430		
(p-Value)	0.135	0.099	0.268	0.755	0.335	0.430		
Pseudo High-Low Mean	-0.002	-0.050	-0.002	-0.001	0.003	0.050		
Pseudo High-Low	820	212	57	687	992	995		
(p-Value)	0.820	0.212	0.057	0.687	0.992	0.995		
Pseudo High-All Mean	0.001	0.013	0.000	-0.001	-0.003	-0.008		
Pseudo High-All	135	99	268	755	335	430		
(p-Value)	0.135	0.099	0.268	0.755	0.335	0.430		
Pseudo High-Index Mean	0.164	-0.712	-0.062	0.238	0.456	0.879		
Pseudo High-Index	998	0	0	1000	1000	1000		
(p-Value)	0.998	0.000	0.000	1.000	1.000	1.000		

Table 14d: FSCORE Low Book-to-Market Firms

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.062	-0.592	-0.147	0.067	0.277	0.733	0.583	2,141
FSCORE								
0	-	-	-	-	-	-	-	0
1	0.114	-0.716	-0.408	-0.009	0.624	1.063	0.500	10
2	0.166	-0.707	-0.373	0.153	0.535	1.340	0.591	22
3	-0.015	-0.939	-0.250	0.074	0.342	0.766	0.593	59
4	0.082	-0.696	-0.096	0.111	0.301	0.734	0.634	161
5	0.000	-0.635	-0.201	-0.010	0.188	0.597	0.491	399
6	0.062	-0.509	-0.131	0.065	0.235	0.716	0.596	545
7	0.076	-0.546	-0.139	0.084	0.317	0.696	0.596	560
8	0.093	-0.527	-0.117	0.101	0.285	0.759	0.616	341
9	0.172	-0.408	-0.069	0.185	0.341	0.827	0.636	44
Low Score (1-2)	0.150	-0.710	-0.384	0.102	0.563	1.253	0.563	32
High Score (8-9)	0.102	-0.513	-0.112	0.111	0.292	0.766	0.618	385
High-Low	-0.048	0.196	0.272	0.009	-0.271	-0.487		417
High-All	0.040	0.078	0.035	0.045	0.015	0.034		
High-Index	0.091	0.186	0.076	0.077	0.053	0.112		

Resampling Result	Mean	5%	25%	Median	75%	95%		
FSCORE								
Pseudo Low Mean	0.062	-0.533	-0.145	0.064	0.271	0.672		
Pseudo Low	887	154	4	720	1000	995		
(p-Value)	0.887	0.154	0.004	0.720	1.000	0.995		
Pseudo High Mean	0.062	-0.586	-0.146	0.066	0.278	0.727		
Pseudo High	19	152	24	12	270	236		
(p-Value)	0.019	0.152	0.024	0.012	0.270	0.236		
Pseudo High-Low Mean	0.001	-0.053	-0.001	0.002	0.007	0.056		
Pseudo High-Low	746	105	1	460	999	993		
(p-Value)	0.746	0.105	0.001	0.460	0.999	0.993		
Pseudo High-All Mean	0.000	0.005	0.001	0.000	0.002	-0.005		
Pseudo High-All	19	152	24	12	270	236		
(p-Value)	0.019	0.152	0.024	0.012	0.270	0.236		
Pseudo High-Index Mean	-0.029	-0.772	-0.222	-0.011	0.225	0.616		
Pseudo High-Index	0	0	0	0	1000	1000		
(p-Value)	0.000	0.000	0.000	0.000	1.000	1.000		

5.2.2. Low BM: FSCORE

The average firm earns its investors 17.9% (one-year return), 6.1% (one-year market adjusted return), 26.4% (two-year return), 6.2% (two-year market adjusted return), average return rates in the period 2002-2013. Of the 2,141 observations 10 firm years achieve a FSCORE of one, and 22 a FSCORE of two, totalling 32/2,141 or 1.49% of the portfolio. Firms scoring one or two are considered low FSCORE firms and shorted five months after fiscal year end for 12 or 24 months.

The average low FSCORE firm earns its investor an average return of 12.0% (one-year return), 3.2% (one-year market adjusted return), 36.7% (two-year return), 15.0% (two-year market adjusted return). The low FSCORE portfolio is not able to deliver significant lower returns in regards to means for any return rate.

High FSCORE firms create an average return of 20.8% (one-year market return), 9.2% (one-year market adjusted return), 28.9% (two-year market return) and 10.2% (two-year market adjusted return). The high FSCORE portfolio means outperform the pseudo high FSCORE portfolios means for one-year, one-year market adjusted and two-year market adjusted returns. The p-value for one-year market adjusted return displays 0.135, well above 0.025.

Due to the poor results from the low score portfolios the buy-and-hold strategy fails to deliver above average returns. In figures the high-low strategy earns its investor 8.9% (one-year market return), -5.9% (one-year market adjusted return), -7.8% (two-year market return) and -4.8% (two-year market adjusted return). Evaluating the pseudo high-low portfolios there is no evidence that the empirical portfolio is able to outperform randomly selected firms.

The pseudo high-all portfolios evaluate whether high FSCORE firms are able to perform better than the low book-to-market segment. Displaying significant excess returns the empirical high-all portfolios deliver 3% (one-year market return), 3.1% (one-year market adjusted return) and 4% (two-year market adjusted return) excess returns. For the two-year market return, the excess return of 2.5% is deemed insignificant.

Last, the pseudo high portfolios less the index averages are examined. For all means except two-year market returns, the empirical portfolios are able to outperform the high-index pseudo portfolios. The high-index strategy earns its investor an average excess return of 6.0% (one-

year return), 8.8% (one-year market adjusted return), 10.1% (two-year return) and 9.1% (two-year market adjusted return).

The FSCORE variable is, in the majority of the cases, able to select winners using a buy-and-hold strategy longing high scoring firms. It experiences difficulties selecting losers for shorting stocks. The following tables examines the EESG variables and their ability to separate winners from losers.

Table 15a: ECNSCORE Low Book-to-Market Firms

One-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.179	-0.340	0.004	0.178	0.347	0.710	0.753	2,141
ECNSCORE								
0-10	0.185	-0.581	-0.079	0.178	0.462	0.964	0.699	136
11-20	0.193	-0.395	-0.018	0.184	0.379	0.792	0.740	196
21-30	0.215	-0.335	0.032	0.198	0.377	0.799	0.792	197
31-40	0.111	-0.469	-0.030	0.135	0.316	0.559	0.659	164
41-50	0.165	-0.347	0.006	0.156	0.338	0.773	0.758	190
51-60	0.209	-0.334	-0.011	0.196	0.407	0.755	0.735	200
61-70	0.204	-0.345	0.052	0.206	0.400	0.786	0.786	201
71-80	0.180	-0.230	0.025	0.181	0.289	0.593	0.783	244
81-90	0.163	-0.274	-0.002	0.179	0.316	0.627	0.748	274
91-100	0.166	-0.198	0.030	0.157	0.315	0.543	0.776	339
Low Score (0-20)	0.190	-0.472	-0.043	0.181	0.413	0.862	0.723	332
High Score (81-100)	0.165	-0.232	0.016	0.167	0.316	0.581	0.763	613
High - Low	-0.025	0.240	0.059	-0.014	-0.097	-0.282		945
High-All	-0.014	0.108	0.011	-0.011	-0.031	-0.129		
High-Index	0.076	0.347	0.094	0.038	0.020	-0.036		

Resampling Result ECNSCORE	Mean	5%	25%	Median	75%	95%
Pseudo Low Mean	0.178	-0.337	0.006	0.178	0.347	0.698
Pseudo Low	761	12	4	583	998	1000
(p-Value)	0.761	0.012	0.004	0.583	0.998	1.000
Pseudo High Mean	0.178	-0.340	0.005	0.176	0.346	0.700
Pseudo High	857	0	161	834	997	1000
(p-Value)	0.857	0.000	0.161	0.834	0.997	1.000
Pseudo High-Low Mean	-0.001	-0.002	-0.001	-0.001	-0.001	0.002
Pseudo High-Low	871	0	2	766	1000	1000
(p-Value)	0.871	0.000	0.002	0.766	1.000	1.000
Pseudo High-All Mean	-0.001	0.000	0.000	-0.002	-0.001	-0.009
Pseudo High-All	857	0	161	834	997	1000
(p-Value)	0.857	0.000	0.161	0.834	0.997	1.000
Pseudo High-Index Mean	0.102	-0.687	-0.089	0.138	0.327	0.736
Pseudo High-Index	996	0	0	1000	1000	1000
(p-Value)	0.996	0.000	0.000	1.000	1.000	1.000

Table 15b: ECNSCORE Low Book-to-Market Firms

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.061	-0.386	-0.103	0.044	0.219	0.545	0.581	2,141
ECNSCORE								
0-10	0.077	-0.589	-0.142	0.017	0.290	0.830	0.522	136
11-20	0.081	-0.473	-0.115	0.070	0.266	0.663	0.582	196
21-30	0.109	-0.332	-0.078	0.092	0.232	0.684	0.614	197
31-40	-0.012	-0.600	-0.183	0.014	0.188	0.415	0.524	164
41-50	0.056	-0.380	-0.104	0.027	0.202	0.537	0.542	190
51-60	0.075	-0.393	-0.132	0.053	0.247	0.569	0.590	200
61-70	0.084	-0.368	-0.082	0.069	0.230	0.605	0.632	201
71-80	0.050	-0.291	-0.094	0.040	0.168	0.445	0.582	244
81-90	0.055	-0.315	-0.092	0.046	0.209	0.432	0.602	274
91-100	0.045	-0.267	-0.093	0.037	0.170	0.362	0.578	339
Low Score (0-20)	0.079	-0.520	-0.126	0.048	0.276	0.731	0.557	332
High Score (81-100)	0.049	-0.289	-0.092	0.041	0.187	0.393	0.589	613
High-Low	-0.030	0.232	0.034	-0.007	-0.089	-0.338		945
High-All	-0.012	0.097	0.011	-0.003	-0.032	-0.152		
High-Index	0.046	0.223	0.056	0.028	0.015	-0.088		

Resampling Result ECNSCORE	Mean	5%	25%	Median	75%	95%		
Pseudo Low Mean	0.061	-0.384	-0.103	0.044	0.216	0.546		
Pseudo Low	888	1	86	633	999	997		
(p-Value)	0.888	0.001	0.086	0.633	0.999	0.997		
Pseudo High Mean	0.061	-0.386	-0.103	0.045	0.218	0.546		
Pseudo High	878	0	152	641	984	1000		
(p-Value)	0.878	0.000	0.152	0.641	0.984	1.000		
Pseudo High-Low Mean	0.000	-0.002	0.000	0.001	0.001	0.000		
Pseudo High-Low	950	0	42	678	1000	1000		
(p-Value)	0.950	0.000	0.042	0.678	1.000	1.000		
Pseudo High-All Mean	0.000	0.000	0.000	0.001	-0.002	0.002		
Pseudo High-All	878	0	152	641	984	1000		
(p-Value)	0.878	0.000	0.152	0.641	0.984	1.000		
Pseudo High-Index Mean	0.015	-0.609	-0.159	0.017	0.203	0.635		
Pseudo High-Index	0	0	0	121	1000	1000		
(p-Value)	0.000	0.000	0.000	0.121	1.000	1.000		

Table 15c: ECNSCORE Low Book-to-Market Firms

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.264	-0.485	0.038	0.284	0.515	0.991	0.779	2,141
ECNSCORE								
0-10	0.290	-0.774	0.003	0.312	0.677	1.367	0.757	136
11-20	0.300	-0.324	0.030	0.286	0.518	1.126	0.786	196
21-30	0.341	-0.452	0.110	0.337	0.590	1.113	0.817	197
31-40	0.187	-0.618	-0.034	0.257	0.500	0.874	0.720	164
41-50	0.223	-0.634	0.013	0.300	0.501	1.018	0.758	190
51-60	0.286	-0.485	-0.014	0.306	0.600	0.990	0.735	200
61-70	0.282	-0.436	0.050	0.289	0.515	1.054	0.781	201
71-80	0.291	-0.327	0.079	0.320	0.515	0.894	0.811	244
81-90	0.236	-0.481	0.021	0.239	0.477	0.827	0.781	274
91-100	0.229	-0.362	0.057	0.243	0.448	0.771	0.802	339
Low Score (0-20)	0.296	-0.508	0.019	0.296	0.583	1.224	0.774	332
High Score (81-100)	0.232	-0.415	0.041	0.241	0.461	0.796	0.793	613
High - Low	-0.064	0.093	0.022	-0.055	-0.123	-0.428		945
High-All	-0.032	0.070	0.003	-0.042	-0.054	-0.195		
High-Index	0.045	0.222	0.087	0.017	-0.007	-0.099		

Resampling Result	Mean	5%	25%	Median	75%	95%		
ECNSCORE								
Pseudo Low Mean	0.264	-0.476	0.038	0.282	0.511	0.978		
Pseudo Low	921	288	258	700	998	1000		
(p-Value)	0.921	0.288	0.258	0.700	0.998	1.000		
Pseudo High Mean	0.264	-0.479	0.037	0.283	0.511	0.985		
Pseudo High	967	40	417	994	997	1000		
(p-Value)	0.967	0.040	0.417	0.994	0.997	1.000		
Pseudo High-Low Mean	0.000	-0.003	-0.001	0.000	0.001	0.007		
Pseudo High-Low	994	121	216	986	1000	1000		
(p-Value)	0.994	0.121	0.216	0.986	1.000	1.000		
Pseudo High-All Mean	-0.001	0.006	-0.001	-0.001	-0.003	-0.006		
Pseudo High-All	967	40	417	994	997	1000		
(p-Value)	0.967	0.040	0.417	0.994	0.997	1.000		
Pseudo High-Index Mean	0.219	-0.701	-0.050	0.265	0.518	1.084		
Pseudo High-Index	1000	0	0	1000	1000	1000		
(p-Value)	1.000	0.000	0.000	1.000	1.000	1.000		

Table 15d: ECNSCORE Low Book-to-Market Firms

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.062	-0.592	-0.147	0.067	0.277	0.733	0.583	2,141
ECNSCORE								
0-10	0.076	-0.876	-0.203	0.088	0.433	1.083	0.574	136
11-20	0.099	-0.514	-0.143	0.079	0.330	0.866	0.571	196
21-30	0.135	-0.679	-0.108	0.131	0.355	0.870	0.645	197
31-40	-0.025	-0.693	-0.222	0.005	0.234	0.629	0.506	164
41-50	0.044	-0.526	-0.157	0.052	0.262	0.680	0.574	190
51-60	0.064	-0.600	-0.196	0.091	0.330	0.717	0.595	200
61-70	0.081	-0.627	-0.150	0.071	0.294	0.809	0.607	201
71-80	0.075	-0.474	-0.108	0.079	0.255	0.664	0.631	244
81-90	0.041	-0.521	-0.139	0.056	0.219	0.590	0.573	274
91-100	0.041	-0.418	-0.127	0.038	0.227	0.492	0.552	339
Low Score (0-20)	0.089	-0.663	-0.168	0.083	0.372	0.955	0.572	332
High Score (81-100)	0.041	-0.464	-0.133	0.046	0.223	0.535	0.561	613
High-Low	-0.048	0.199	0.035	-0.036	-0.149	-0.419		945
High-All	-0.021	0.128	0.014	-0.020	-0.054	-0.197		
High-Index	0.030	0.235	0.055	0.012	-0.016	-0.119		

Resampling Result	Mean	5%	25%	Median	75%	95%
ECNSCORE						
Pseudo Low Mean	0.062	-0.583	-0.146	0.066	0.277	0.726
Pseudo Low	889	137	138	807	1000	1000
(p-Value)	0.889	0.137	0.138	0.807	1.000	1.000
Pseudo High Mean	0.061	-0.590	-0.147	0.066	0.276	0.730
Pseudo High	918	1	130	937	999	1000
(p-Value)	0.918	0.001	0.130	0.937	0.999	1.000
Pseudo High-Low Mean	-0.001	-0.007	0.000	0.000	-0.001	0.004
Pseudo High-Low	967	6	79	936	1000	1000
(p-Value)	0.967	0.006	0.079	0.936	1.000	1.000
Pseudo High-All Mean	-0.001	0.002	0.000	-0.001	0.000	-0.003
Pseudo High-All	918	1	130	937	999	1000
(p-Value)	0.918	0.001	0.130	0.937	0.999	1.000
Pseudo High-Index Mean	0.031	-0.825	-0.202	0.054	0.292	0.849
Pseudo High-Index	526	0	0	1000	1000	1000
(p-Value)	0.526	0.000	0.000	1.000	1.000	1.000

5.2.3. Low BM: EESG Economic

The average low ECNSCORE firm earns its investors 19.0% (one-year return), 7.9% (one-year market adjusted return), 29.6% (two-year return) and 8.9% (two-year market adjusted return), average return rates in the period 2002-2013. Of the 6,264 observations 136 firm years achieve a ECNSCORE between 0-10, and 196 a score between 11-20, totalling 332/2,141 or 15.5% of the index. Firms scoring between 0-20 are considered low ECNSCORE firms and shorted five months after fiscal year end for 12 or 24 months. The low ECNSCORE portfolio is unable to deliver significant lower returns in regards to means across all rates of return.

High ECNSCORE firms create an average return of 16.5% (one-year market return), 4.9% (one-year market adjusted return), 23.2% (two-year market return) and 4.1% (two-year market adjusted return). The high ECNSCORE portfolio fails to outperform the pseudo portfolios in instances.

Due to the poor results from both the low- and high-score portfolios the buy-and-hold strategy also fails to deliver above average returns. In figures the high-low strategy earns its investor -2.5% (one-year return), -3.0% (one-year market adjusted return), -6.4% (two-year return) and -4.8% (two-year market adjusted return). Evaluating the pseudo high-low portfolios there is no evidence that the empirical portfolio is able to outperform randomly selected firms.

The high-all portfolios display similar insignificant results. In fact, lower ranges of ECNSCORE firms earn higher average returns than higher ECNSCORE firms. With lower than average low book-to-market returns the high ECNSCORE portfolios fail to provide excess returns.

Last, the pseudo high portfolios less the index averages are examined. For all instances except one-year market adjusted return, the pseudo portfolios are able to outperform the high-all empirical portfolio. The high-index strategy earns its investor an average return of 7.6% (one-year return), 4.6% (one-year market adjusted return), 4.5% (two-year return) and 3.0% (two-year market adjusted return), lower than being long in the low book-to-market segment.

The ECNSCORE variable is, in the majority of the cases, unable to select winners from losers by using a buy-and-hold strategy shorting low scoring firms and longing high scoring firms. As few groups show negative returns across return rates, shorting a stock is unadvised in the case

that the stock increases in value. Investors are more likely to earn excess returns by longing ECNSCORE firms in the range of 11-30. The 11-30 range produces the highest returns with an average return of 20.4%[45] (one-year return), 9.5%[46] (one-year market adjusted return), 32.1%[47] (two-year return), and 11.7%[48] (two-year market adjusted return). More specifically range 21-30 delivers strong performance at 21.5% (one-year return), 10.9% (one-year market adjusted return), 34.1% (two-year return) and 13.5% (two-year market adjusted return), well above the index.

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[45] ((0.193*196) + (0.215*197)) / (196+197)
[46] ((0.081*196) + (0.109*197)) / (196+197)
[47] ((0.300*196) + (0.341*197)) / (196+197)
[48] ((0.099*196) + (0.135*197)) / (196+197)

Table 16a: ENVSCORE Low Book-to-Market Firms

One-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.179	-0.340	0.004	0.178	0.347	0.710	0.753	2,141
ENVSCORE								
0-10	0.128	-0.413	-0.040	0.167	0.320	0.563	0.725	109
11-20	0.190	-0.356	-0.007	0.184	0.384	0.781	0.736	773
21-30	0.202	-0.330	0.018	0.176	0.375	0.736	0.775	209
31-40	0.216	-0.327	0.000	0.186	0.379	0.938	0.746	130
41-50	0.260	-0.275	0.066	0.241	0.389	0.779	0.831	83
51-60	0.146	-0.385	-0.009	0.174	0.318	0.616	0.735	83
61-70	0.146	-0.383	-0.015	0.188	0.325	0.557	0.714	105
71-80	0.231	-0.104	0.095	0.226	0.318	0.677	0.860	114
81-90	0.159	-0.295	0.017	0.172	0.314	0.514	0.763	241
91-100	0.127	-0.335	-0.005	0.140	0.272	0.524	0.741	294
Low Score (0-20)	0.182	-0.363	-0.011	0.182	0.376	0.754	0.735	882
High Score (81-100)	0.142	-0.317	0.005	0.154	0.291	0.519	0.751	535
High-Low	-0.040	0.046	0.016	-0.028	-0.085	-0.235		1,417
High-All	-0.037	0.023	0.000	-0.024	-0.056	-0.190		
High-Index	0.053	0.262	0.083	0.025	-0.005	-0.097		

Resampling Result	Mean	5%	25%	Median	75%	95%		
ENVSCORE								
Pseudo Low Mean	0.179	-0.338	0.004	0.177	0.347	0.706		
Pseudo Low	680	81	9	730	994	930		
(p-Value)	0.680	0.081	0.009	0.730	0.994	0.930		
Pseudo High Mean	0.178	-0.339	0.005	0.176	0.346	0.702		
Pseudo High	998	204	467	980	1000	1000		
(p-Value)	0.998	0.204	0.467	0.980	1.000	1.000		
Pseudo High-Low Mean	-0.001	-0.001	0.001	-0.001	-0.001	-0.004		
Pseudo High-Low	997	91	179	974	1000	1000		
(p-Value)	0.997	0.091	0.179	0.974	1.000	1.000		
Pseudo High-All Mean	-0.001	0.000	0.001	-0.002	-0.001	-0.008		
Pseudo High-All	998	204	467	980	1000	1000		
(p-Value)	0.998	0.204	0.467	0.980	1.000	1.000		
Pseudo High-Index Mean	0.125	-0.602	-0.078	0.151	0.351	0.799		
Pseudo High-Index	1000	0	0	1000	1000	1000		
(p-Value)	1.000	0.000	0.000	1.000	1.000	1.000		

Table 16b: ENVSCORE Low Book-to-Market Firms

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.061	-0.386	-0.103	0.044	0.219	0.545	0.581	2,141
ENVSCORE								
0-10	0.010	-0.430	-0.134	0.024	0.175	0.449	0.550	109
11-20	0.083	-0.410	-0.107	0.060	0.268	0.621	0.594	773
21-30	0.089	-0.370	-0.089	0.057	0.247	0.684	0.584	209
31-40	0.105	-0.473	-0.097	0.094	0.266	0.757	0.623	130
41-50	0.126	-0.341	-0.063	0.064	0.256	0.574	0.614	83
51-60	0.034	-0.421	-0.071	0.016	0.182	0.460	0.530	83
61-70	0.023	-0.479	-0.118	0.034	0.182	0.412	0.552	105
71-80	0.080	-0.245	-0.022	0.056	0.197	0.409	0.658	114
81-90	0.024	-0.323	-0.111	0.023	0.171	0.356	0.539	241
91-100	0.010	-0.339	-0.119	0.026	0.143	0.395	0.554	294
Low Score (0-20)	0.074	-0.413	-0.111	0.056	0.257	0.600	0.588	882
High Score (81-100)	0.016	-0.332	-0.116	0.025	0.155	0.377	0.548	535
High-Low	-0.057	0.081	-0.005	-0.031	-0.101	-0.222		1,417
High-All	-0.045	0.054	-0.013	-0.019	-0.064	-0.167		
High-Index	0.013	0.179	0.032	0.011	-0.017	-0.104		

Resampling Result	Mean	5%	25%	Median	75%	95%
ENVSCORE						
Pseudo Low Mean	0.061	-0.387	-0.103	0.045	0.218	0.548
Pseudo Low	939	98	197	949	1000	974
(p-Value)	0.939	0.098	0.197	0.949	1.000	0.974
Pseudo High Mean	0.061	-0.385	-0.103	0.045	0.218	0.546
Pseudo High	1000	41	847	983	1000	1000
(p-Value)	1.000	0.041	0.847	0.983	1.000	1.000
Pseudo High-Low Mean	0.000	0.002	0.000	0.000	-0.001	-0.002
Pseudo High-Low	1000	13	657	994	1000	1000
(p-Value)	1.000	0.013	0.657	0.994	1.000	1.000
Pseudo High-All Mean	0.000	0.001	0.000	0.001	-0.002	0.001
Pseudo High-All	1000	41	847	983	1000	1000
(p-Value)	1.000	0.041	0.847	0.983	1.000	1.000
Pseudo High-Index Mean	0.048	-0.564	-0.135	0.034	0.235	0.650
Pseudo High-Index	1000	0	0	990	1000	1000
(p-Value)	1.000	0.000	0.000	0.990	1.000	1.000

Table 16c: ENVSCORE Low Book-to-Market Firms

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.264	-0.485	0.038	0.284	0.515	0.991	0.779	2,141
ENVSCORE								
0-10	0.294	-0.301	0.021	0.325	0.511	0.826	0.807	109
11-20	0.265	-0.567	-0.013	0.284	0.573	1.096	0.743	773
21-30	0.258	-0.516	0.049	0.300	0.500	0.990	0.789	209
31-40	0.280	-0.525	0.011	0.253	0.508	1.148	0.754	130
41-50	0.351	-0.295	0.085	0.307	0.531	1.009	0.855	83
51-60	0.238	-0.581	0.070	0.271	0.503	0.739	0.783	83
61-70	0.245	-0.434	0.032	0.233	0.456	0.735	0.790	105
71-80	0.303	-0.444	0.102	0.349	0.519	0.969	0.825	114
81-90	0.271	-0.343	0.091	0.313	0.489	0.810	0.805	241
91-100	0.217	-0.485	0.058	0.234	0.430	0.781	0.803	294
Low Score (0-20)	0.269	-0.534	-0.009	0.289	0.565	1.062	0.751	882
High Score (81-100)	0.241	-0.421	0.073	0.270	0.457	0.794	0.804	535
High-Low	-0.027	0.113	0.082	-0.019	-0.109	-0.269		1,417
High-All	-0.023	0.064	0.035	-0.014	-0.058	-0.197		
High-Index	0.054	0.217	0.119	0.045	-0.011	-0.101		

Resampling Result	Mean	5%	25%	Median	75%	95%
ENVSCORE						
Pseudo Low Mean	0.265	-0.476	0.038	0.284	0.514	0.988
Pseudo Low	614	55	2	694	1000	975
(p-Value)	0.614	0.055	0.002	0.694	1.000	0.975
Pseudo High Mean	0.265	-0.475	0.037	0.283	0.512	0.986
Pseudo High	909	89	25	794	1000	1000
(p-Value)	0.909	0.089	0.025	0.794	1.000	1.000
Pseudo High-Low Mean	0.000	0.001	-0.002	-0.001	-0.002	-0.002
Pseudo High-Low	904	23	0	817	1000	1000
(p-Value)	0.904	0.023	0.000	0.817	1.000	1.000
Pseudo High-All Mean	0.001	0.010	-0.001	-0.001	-0.002	-0.005
Pseudo High-All	909	89	25	794	1000	1000
(p-Value)	0.909	0.089	0.025	0.794	1.000	1.000
Pseudo High-Index Mean	0.211	-0.691	-0.082	0.237	0.523	1.087
Pseudo High-Index	1000	0	0	1000	1000	1000
(p-Value)	1.000	0.000	0.000	1.000	1.000	1.000

Table 16d: ENVSCORE Low Book-to-Market Firms

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.062	-0.592	-0.147	0.067	0.277	0.733	0.583	2,141
ENVSCORE								
0-10	0.037	-0.513	-0.136	0.063	0.196	0.534	0.569	109
11-20	0.086	-0.651	-0.151	0.101	0.348	0.855	0.607	773
21-30	0.060	-0.666	-0.149	0.057	0.292	0.856	0.589	209
31-40	0.086	-0.746	-0.195	0.080	0.341	0.836	0.577	130
41-50	0.134	-0.320	-0.073	0.068	0.313	0.689	0.627	83
51-60	0.030	-0.593	-0.201	-0.008	0.276	0.618	0.470	83
61-70	0.022	-0.514	-0.158	0.014	0.217	0.506	0.514	105
71-80	0.077	-0.443	-0.078	0.102	0.229	0.554	0.658	114
81-90	0.039	-0.478	-0.141	0.069	0.230	0.575	0.585	241
91-100	0.015	-0.423	-0.137	0.019	0.183	0.491	0.537	294
Low Score (0-20)	0.080	-0.634	-0.150	0.096	0.329	0.815	0.602	882
High Score (81-100)	0.026	-0.448	-0.139	0.042	0.204	0.529	0.559	535
High-Low	-0.054	0.186	0.011	-0.055	-0.125	-0.286		1,417
High-All	-0.036	0.144	0.008	-0.025	-0.072	-0.204		
High-Index	0.015	0.252	0.049	0.008	-0.035	-0.126		

Resampling Result	Mean	5%	25%	Median	75%	95%
ENVSCORE						
Pseudo Low Mean	0.062	-0.590	-0.146	0.066	0.278	0.730
Pseudo Low	941	154	407	996	1000	996
(p-Value)	0.941	0.154	0.407	0.996	1.000	0.996
Pseudo High Mean	0.063	-0.587	-0.145	0.067	0.277	0.727
Pseudo High	990	3	340	965	1000	1000
(p-Value)	0.990	0.003	0.340	0.965	1.000	1.000
Pseudo High-Low Mean	0.000	0.003	0.001	0.001	0.000	-0.003
Pseudo High-Low	996	1	293	999	1000	1000
(p-Value)	0.996	0.001	0.293	0.999	1.000	1.000
Pseudo High-All Mean	0.001	0.005	0.002	0.001	0.001	-0.005
Pseudo High-All	990	3	340	965	1000	1000
(p-Value)	0.990	0.003	0.340	0.965	1.000	1.000
Pseudo High-Index Mean	0.048	-0.838	-0.194	0.059	0.312	0.853
Pseudo High-Index	983	0	0	1000	1000	1000
(p-Value)	0.983	0.000	0.000	1.000	1.000	1.000

5.2.4. Low BM: EESG Environmental

The average low ENVSCORE firm earns its investors 18.2% (one-year return), 7.4% (one-year market adjusted return), 26.9% (two-year return) and 8.0% (two-year market adjusted return), average return rates in the period 2002-2013. Of the 2,141 observations 109 firm years achieve an ENVSCORE between 0-10, and 773 a score between 11-20, totalling 882/2,141 or 41.2% of the index. As low ENVSCORE firms display above average returns, they do not significantly outperform random selection for any return rate.

High ENVSCORE firms create an average return of 14.2% (one-year market return), 1.6% (one-year market adjusted return), 24.1% (two-year market return) and -5.4% (two-year market adjusted return). The high ENVSCORE portfolios fails to outperform the pseudo portfolios in all instances deeming it unfit to select winners.

Due to the poor results from both the low- and high-score portfolios the buy-and-hold strategy fails to deliver above average returns. In figures the high-low strategy earns its investor -4.0% (one-year return), -5.7% (one-year market adjusted return), -2.7% (two-year return) and -5.4% (two-year market adjusted return). Evaluating the pseudo high-low portfolios there is no evidence that the empirical portfolio is able to outperform randomly selected firms.

The high-all strategy earns its investor an average return of -3.7% (one-year return), -4.5% (one-year market adjusted return), -2.3% (two-year return) and -3.6% (two-year market adjusted return) deeming the high ENVSCORE portfolios unable to select winners. Although leaving investors with positive returns, the high-index strategy earns less than the low score portfolios with 5.3% (one-year return), 1.3% (one-year market adjusted return), 5.4% (two-year return) and 1.5% (two-year market adjusted return).

The ENVSCORE variable is, in the majority of the cases, unable to select winners from losers by using a buy-and-hold strategy shorting low scoring firms and longing high scoring firms. As no group show negative returns across return rates, shorting a stock is unadvised in the case that the stock increases in value. The 41-50 range produces the highest returns with an average return of 26.0% (one-year return), 12.6% (one-year market adjusted return), 35.1% (two-year return), and 13.4% (two-year market adjusted return) at the cost of sample size. Investors are advised to take long positions in ENVSCORE stocks in the range of 21-50 when available.

Investors are further advised against taking short positions based on ENVSCORE as no sub group is able to display significant negative returns.

Table 17a: CGVSCORE Low Book-to-Market Firms

One-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.179	-0.340	0.004	0.178	0.347	0.710	0.753	2,141
CGVSCORE								
0-10	0.092	-0.344	-0.198	0.020	0.236	0.733	0.600	10
11-20	0.137	-0.501	-0.028	0.122	0.367	0.692	0.676	34
21-30	0.162	-0.274	-0.009	0.172	0.337	0.576	0.714	35
31-40	0.282	-0.341	0.021	0.321	0.489	0.953	0.762	42
41-50	0.173	-0.373	0.016	0.169	0.398	0.738	0.759	108
51-60	0.206	-0.229	0.025	0.194	0.359	0.746	0.780	186
61-70	0.191	-0.362	-0.013	0.195	0.401	0.771	0.725	335
71-80	0.188	-0.341	0.013	0.174	0.345	0.710	0.759	518
81-90	0.165	-0.320	0.014	0.167	0.314	0.629	0.766	585
91-100	0.155	-0.338	-0.003	0.168	0.313	0.542	0.747	288
Low Score (0-20)	0.127	-0.465	-0.067	0.099	0.337	0.701	0.659	44
High Score (81-100)	0.162	-0.326	0.008	0.168	0.314	0.600	0.759	873
High-Low	0.035	0.139	0.075	0.069	-0.023	-0.101		917
High-All	-0.017	0.014	0.004	-0.010	-0.033	-0.110		
High-Index	0.072	0.253	0.086	0.039	0.017	-0.016		

Resampling Result	Mean	5%	25%	Median	75%	95%		
CGVSCORE								
Pseudo Low Mean	0.176	-0.310	0.008	0.176	0.343	0.663		
Pseudo Low	158	124	97	45	490	623		
(p-Value)	0.158	0.124	0.097	0.045	0.490	0.623		
Pseudo High Mean	0.179	-0.339	0.004	0.177	0.347	0.705		
Pseudo High	977	228	365	875	1000	1000		
(p-Value)	0.977	0.228	0.365	0.875	1.000	1.000		
Pseudo High-Low Mean	0.003	-0.029	-0.004	0.001	0.004	0.042		
Pseudo High-Low	269	105	92	73	715	865		
(p-Value)	0.269	0.105	0.092	0.073	0.715	0.865		
Pseudo High-All Mean	0.000	0.001	0.000	-0.001	0.000	-0.005		
Pseudo High-All	977	228	365	875	1000	1000		
(p-Value)	0.977	0.228	0.365	0.875	1.000	1.000		
Pseudo High-Index Mean	0.106	-0.592	-0.082	0.138	0.330	0.721		
Pseudo High-Index	1000	0	0	1000	1000	1000		
(p-Value)	1.000	0.000	0.000	1.000	1.000	1.000		

Table 17b: CGVSCORE Low Book-to-Market Firms

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.061	-0.386	-0.103	0.044	0.219	0.545	0.581	2,141
CGVSCORE								
0-10	0.004	-0.451	-0.107	0.002	0.093	0.489	0.500	10
11-20	0.032	-0.640	-0.141	0.053	0.262	0.525	0.529	34
21-30	0.081	-0.209	-0.090	0.061	0.168	0.508	0.657	35
31-40	0.174	-0.405	-0.014	0.216	0.348	0.836	0.690	42
41-50	0.042	-0.496	-0.156	0.043	0.279	0.539	0.546	108
51-60	0.081	-0.365	-0.099	0.067	0.241	0.552	0.613	186
61-70	0.065	-0.432	-0.122	0.053	0.258	0.606	0.585	335
71-80	0.076	-0.341	-0.097	0.043	0.231	0.579	0.577	518
81-90	0.044	-0.377	-0.100	0.037	0.169	0.493	0.568	585
91-100	0.044	-0.359	-0.104	0.036	0.176	0.434	0.583	288
Low Score (0-20)	0.026	-0.597	-0.133	0.042	0.224	0.517	0.523	44
High Score (81-100)	0.044	-0.371	-0.101	0.037	0.171	0.474	0.573	873
High-Low	0.018	0.226	0.032	-0.005	-0.053	-0.043		917
High-All	-0.017	0.015	0.002	-0.007	-0.048	-0.071		
High-Index	0.041	0.140	0.047	0.023	-0.001	-0.007		

Resampling Result	Mean	5%	25%	Median	75%	95%
CGVSCORE						
Pseudo Low Mean	0.059	-0.360	-0.100	0.045	0.210	0.512
Pseudo Low	225	34	220	496	614	555
(p-Value)	0.225	0.034	0.220	0.496	0.614	0.555
Pseudo High Mean	0.061	-0.386	-0.103	0.045	0.218	0.548
Pseudo High	982	214	454	896	1000	999
(p-Value)	0.982	0.214	0.454	0.896	1.000	0.999
Pseudo High-Low Mean	0.002	-0.027	-0.003	0.000	0.008	0.036
Pseudo High-Low	363	25	218	575	883	783
(p-Value)	0.363	0.025	0.218	0.575	0.883	0.783
Pseudo High-All Mean	0.000	0.000	0.000	0.001	-0.001	0.003
Pseudo High-All	982	214	454	896	1000	999
(p-Value)	0.982	0.214	0.454	0.896	1.000	0.999
Pseudo High-Index Mean	0.021	-0.526	-0.150	0.022	0.220	0.555
Pseudo High-Index	5	0	0	414	1000	1000
(p-Value)	0.005	0.000	0.000	0.414	1.000	1.000

Table 17c: CGVSCORE Low Book-to-Market Firms

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.264	-0.485	0.038	0.284	0.515	0.991	0.779	2,141
CGVSCORE								
0-10	0.245	-0.427	0.020	0.189	0.426	1.011	0.800	10
11-20	0.274	-0.769	0.091	0.292	0.572	1.246	0.794	34
21-30	0.223	-0.430	0.066	0.220	0.433	0.674	0.829	35
31-40	0.454	-0.355	0.295	0.424	0.751	1.051	0.857	42
41-50	0.318	-0.386	0.051	0.310	0.599	1.083	0.759	108
51-60	0.313	-0.304	0.041	0.308	0.535	1.120	0.817	186
61-70	0.308	-0.432	0.022	0.312	0.558	1.105	0.773	335
71-80	0.257	-0.507	0.037	0.300	0.502	0.964	0.772	518
81-90	0.213	-0.535	0.010	0.232	0.470	0.880	0.756	585
91-100	0.255	-0.413	0.058	0.262	0.463	0.809	0.809	288
Low Score (0-20)	0.267	-0.691	0.075	0.268	0.539	1.193	0.795	44
High Score (81-100)	0.227	-0.495	0.026	0.242	0.468	0.856	0.773	873
High-Low	-0.040	0.196	-0.049	-0.027	-0.071	-0.336		917
High-All	-0.037	-0.010	-0.012	-0.042	-0.047	-0.134		
High-Index	0.039	0.143	0.072	0.017	0.001	-0.039		

Resampling Result	Mean	5%	25%	Median	75%	95%
CGVSCORE						
Pseudo Low Mean	0.264	-0.431	0.039	0.282	0.509	0.931
Pseudo Low	513	91	660	405	682	929
(p-Value)	0.513	0.091	0.660	0.405	0.682	0.929
Pseudo High Mean	0.263	-0.481	0.037	0.283	0.513	0.986
Pseudo High	997	640	773	999	1000	1000
(p-Value)	0.997	0.640	0.773	0.999	1.000	1.000
Pseudo High-Low Mean	0.000	-0.050	-0.002	0.001	0.003	0.055
Pseudo High-Low	698	99	712	664	851	976
(p-Value)	0.698	0.099	0.712	0.664	0.851	0.976
Pseudo High-All Mean	-0.001	0.004	-0.001	-0.001	-0.002	-0.005
Pseudo High-All	997	640	773	999	1000	1000
(p-Value)	0.997	0.640	0.773	0.999	1.000	1.000
Pseudo High-Index Mean	0.224	-0.623	-0.035	0.266	0.512	1.025
Pseudo High-Index	1000	0	0	1000	1000	1000
(p-Value)	1.000	0.000	0.000	1.000	1.000	1.000

Table 17d: CGVSCORE Low Book-to-Market Firms

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.062	-0.592	-0.147	0.067	0.277	0.733	0.583	2,141
CGVSCORE								
0-10	0.065	-0.380	-0.236	-0.033	0.381	0.650	0.500	10
11-20	0.065	-1.043	-0.137	0.161	0.380	0.829	0.647	34
21-30	0.062	-0.373	-0.146	0.073	0.220	0.532	0.657	35
31-40	0.243	-0.218	0.057	0.236	0.391	0.806	0.786	42
41-50	0.076	-0.583	-0.155	0.057	0.315	0.769	0.574	108
51-60	0.104	-0.472	-0.136	0.094	0.318	0.805	0.618	186
61-70	0.098	-0.602	-0.138	0.093	0.335	0.839	0.582	335
71-80	0.059	-0.575	-0.141	0.061	0.269	0.728	0.591	518
81-90	0.020	-0.654	-0.158	0.037	0.225	0.633	0.549	585
91-100	0.052	-0.416	-0.145	0.053	0.240	0.561	0.576	288
Low Score (0-20)	0.065	-0.892	-0.159	0.117	0.380	0.789	0.614	44
High Score (81-100)	0.030	-0.576	-0.154	0.042	0.230	0.609	0.558	873
High-Low	-0.035	0.317	0.005	-0.075	-0.150	-0.180		917
High-All	-0.031	0.016	-0.007	-0.024	-0.047	-0.124		
High-Index	0.019	0.124	0.034	0.008	-0.009	-0.046		

Resampling Result	Mean	5%	25%	Median	75%	95%		
CGVSCORE								
Pseudo Low Mean	0.064	-0.537	-0.142	0.066	0.272	0.681		
Pseudo Low	511	35	366	800	935	766		
(p-Value)	0.511	0.035	0.366	0.800	0.935	0.766		
Pseudo High Mean	0.062	-0.589	-0.145	0.066	0.277	0.731		
Pseudo High	998	375	769	995	1000	1000		
(p-Value)	0.998	0.375	0.769	0.995	1.000	1.000		
Pseudo High-Low Mean	-0.001	-0.052	-0.004	0.001	0.005	0.050		
Pseudo High-Low	704	34	425	886	983	918		
(p-Value)	0.704	0.034	0.425	0.886	0.983	0.918		
Pseudo High-All Mean	0.000	0.003	0.002	0.000	0.001	-0.002		
Pseudo High-All	998	375	769	995	1000	1000		
(p-Value)	0.998	0.375	0.769	0.995	1.000	1.000		
Pseudo High-Index Mean	0.043	-0.712	-0.179	0.058	0.286	0.776		
Pseudo High-Index	981	0	0	1000	1000	1000		
(p-Value)	0.981	0.000	0.000	1.000	1.000	1.000		

5.2.5. Low BM: EESG Governmental

The average low CGVSCORE firm earns its investors 12.7% (one-year return), 4.4% (one-year market adjusted return), 26.7% (two-year return) and -3.5% (two-year market adjusted return), average return rates in the period 2002-2013. Of the 2,141 observations 10 firm years achieve an ENVSCORE between 0-10, and 34 a score between 11-20, totalling 44/2,141 or 2.1% of the segment. Although providing below segment average returns for one-year and one-year market adjusted returns, low CGVSCORE firms do not significantly outperform random selection for any return rate.

High CGVSCORE firms create an average return of 16.2% (one-year market return), 4.4% (one-year market adjusted return), 22.7% (two-year market return) and 3.0% (two-year market adjusted return). With below average segment returns, the high ENVSCORE portfolios fails to outperform the pseudo portfolios in all instances deeming it unfit to select winners.

In figures the high-low strategy earns its investor 3.5% (one-year return), 1.8% (one-year market adjusted return), -4.0% (two-year return) and -3.5% (two-year market adjusted return). Evaluating the pseudo high-low portfolios there is no evidence that the empirical portfolio is able to outperform randomly selected firms.

The high-all strategy earns its investor an average return of -3.7% (one-year return), -4.5% (one-year market adjusted return), -2.3% (two-year return) and -3.6% (two-year market adjusted return) deeming high CGVSCORE portfolios unable to select winners. The high-index strategy is able to deliver significant higher returns for one-year market adjusted returns. For the remaining return rates, the strategy fails to deliver significant results.

The CGVSCORE variable is, in the majority of the cases, unable to select winners from losers by using a buy-and-hold strategy shorting low scoring firms and longing high scoring firms. As no group show negative returns across return rates, shorting a stock is unadvised in the case that the stock increases in value. The 31-40 range produces the highest returns with an average return of 28.3% (one-year return), 17.4% (one-year market adjusted return), 45.4% (two-year return), and 24.3% (two-year market adjusted return) at the cost of sample size. Investors are advised to take long positions in CGVSCORE stocks in the range of 41-70 when available. Investors are further advised against taking short positions based on CGVSCORE as no sub group is able to display significant negative returns.

Table 18a: SOCSCORE Low Book-to-Market Firms

One-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.179	-0.340	0.004	0.178	0.347	0.710	0.753	2,141
SOCSCORE								
0-10	0.239	-0.481	-0.020	0.218	0.519	0.964	0.717	138
11-20	0.189	-0.307	0.010	0.184	0.359	0.746	0.762	340
21-30	0.183	-0.512	-0.014	0.190	0.403	0.761	0.739	299
31-40	0.163	-0.398	-0.013	0.155	0.347	0.674	0.718	248
41-50	0.191	-0.282	-0.003	0.181	0.327	0.782	0.748	202
51-60	0.183	-0.330	0.014	0.206	0.353	0.621	0.760	167
61-70	0.198	-0.307	0.104	0.204	0.356	0.636	0.833	144
71-80	0.173	-0.340	0.049	0.173	0.330	0.588	0.788	137
81-90	0.161	-0.251	-0.011	0.181	0.302	0.517	0.731	193
91-100	0.138	-0.218	0.008	0.143	0.254	0.470	0.762	273
Low Score (0-20)	0.204	-0.357	0.001	0.194	0.405	0.809	0.749	478
High Score (81-100)	0.147	-0.232	0.000	0.159	0.274	0.489	0.749	466
High-Low	-0.056	0.125	-0.001	-0.035	-0.131	-0.319		944
High-All	-0.031	0.108	-0.004	-0.020	-0.073	-0.220		
High-Index	0.058	0.348	0.078	0.030	-0.022	-0.127		

Resampling Result	Mean	5%	25%	Median	75%	95%
SOCSCORE						
Pseudo Low Mean	0.179	-0.336	0.005	0.177	0.347	0.703
Pseudo Low	967	182	458	902	1000	995
(p-Value)	0.967	0.182	0.458	0.902	1.000	0.995
Pseudo High Mean	0.178	-0.336	0.005	0.177	0.347	0.699
Pseudo High	993	1	586	925	1000	1000
(p-Value)	0.993	0.001	0.586	0.925	1.000	1.000
Pseudo High-Low Mean	0.000	0.000	0.000	0.000	0.000	-0.004
Pseudo High-Low	999	7	536	973	1000	1000
(p-Value)	0.999	0.007	0.536	0.973	1.000	1.000
Pseudo High-All Mean	0.000	0.004	0.001	-0.001	0.000	-0.010
Pseudo High-All	993	1	586	925	1000	1000
(p-Value)	0.993	0.001	0.586	0.925	1.000	1.000
Pseudo High-Index Mean	0.120	-0.684	-0.073	0.147	0.369	0.826
Pseudo High-Index	1000	0	0	1000	1000	1000
(p-Value)	1.000	0.000	0.000	1.000	1.000	1.000

Table 18b: SOCSCORE Low Book-to-Market Firms

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.061	-0.386	-0.103	0.044	0.219	0.545	0.581	2,141
SOCSCORE								
0-10	0.127	-0.472	-0.153	0.139	0.393	0.796	0.638	138
11-20	0.088	-0.325	-0.081	0.055	0.243	0.551	0.609	340
21-30	0.066	-0.447	-0.129	0.056	0.278	0.556	0.572	299
31-40	0.052	-0.487	-0.132	0.026	0.218	0.593	0.548	248
41-50	0.056	-0.385	-0.135	0.033	0.195	0.573	0.550	202
51-60	0.049	-0.389	-0.101	0.013	0.189	0.461	0.557	167
61-70	0.071	-0.387	-0.060	0.076	0.213	0.436	0.667	144
71-80	0.054	-0.367	-0.090	0.041	0.179	0.409	0.584	137
81-90	0.044	-0.322	-0.088	0.039	0.194	0.416	0.575	193
91-100	0.019	-0.294	-0.105	0.032	0.149	0.347	0.549	273
Low Score (0-20)	0.099	-0.368	-0.102	0.079	0.287	0.622	0.617	478
High Score (81-100)	0.029	-0.306	-0.098	0.035	0.168	0.376	0.560	466
High-Low	-0.070	0.062	0.004	-0.044	-0.119	-0.246		944
High-All	-0.032	0.080	0.005	-0.009	-0.051	-0.169		
High-Index	0.026	0.205	0.050	0.022	-0.005	-0.106		

Resampling Result	Mean	5%	25%	Median	75%	95%
SOCSCORE						
Pseudo Low Mean	0.061	-0.386	-0.103	0.045	0.217	0.547
Pseudo Low	999	744	502	997	1000	981
(p-Value)	0.999	0.744	0.502	0.997	1.000	0.981
Pseudo High Mean	0.061	-0.386	-0.103	0.045	0.217	0.547
Pseudo High	996	3	366	828	1000	1000
(p-Value)	0.996	0.003	0.366	0.828	1.000	1.000
Pseudo High-Low Mean	0.000	0.000	0.000	0.000	0.000	0.001
Pseudo High-Low	1000	82	439	994	1000	1000
(p-Value)	1.000	0.082	0.439	0.994	1.000	1.000
Pseudo High-All Mean	0.000	0.000	0.000	0.001	-0.002	0.002
Pseudo High-All	996	3	366	828	1000	1000
(p-Value)	0.996	0.003	0.366	0.828	1.000	1.000
Pseudo High-Index Mean	0.035	-0.591	-0.153	0.024	0.222	0.653
Pseudo High-Index	766	0	0	555	1000	1000
(p-Value)	0.766	0.000	0.000	0.555	1.000	1.000

Table 18c: SOCSCORE Low Book-to-Market Firms

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.264	-0.485	0.038	0.284	0.515	0.991	0.779	2,141
SOCSCORE								
0-10	0.370	-0.774	0.053	0.255	0.734	1.613	0.797	138
11-20	0.252	-0.467	0.010	0.297	0.534	0.977	0.762	340
21-30	0.278	-0.534	0.000	0.294	0.557	1.061	0.749	299
31-40	0.221	-0.561	-0.013	0.268	0.481	0.971	0.746	248
41-50	0.287	-0.487	0.050	0.310	0.526	1.095	0.782	202
51-60	0.285	-0.412	0.037	0.328	0.534	0.789	0.778	167
61-70	0.264	-0.450	0.069	0.330	0.529	0.825	0.806	144
71-80	0.267	-0.440	0.063	0.277	0.504	0.882	0.796	137
81-90	0.269	-0.406	0.090	0.283	0.463	0.815	0.813	193
91-100	0.216	-0.341	0.056	0.230	0.423	0.666	0.806	273
Low Score (0-20)	0.286	-0.556	0.022	0.285	0.591	1.161	0.772	478
High Score (81-100)	0.238	-0.368	0.070	0.252	0.440	0.728	0.809	466
High-Low	-0.048	0.188	0.048	-0.033	-0.152	-0.433		944
High-All	-0.027	0.117	0.032	-0.032	-0.075	-0.263		
High-Index	0.050	0.270	0.116	0.028	-0.028	-0.168		

Resampling Result	Mean	5%	25%	Median	75%	95%
SOCSCORE						
Pseudo Low Mean	0.264	-0.477	0.037	0.283	0.512	0.981
Pseudo Low	875	74	263	555	1000	999
(p-Value)	0.875	0.074	0.263	0.555	1.000	0.999
Pseudo High Mean	0.263	-0.477	0.037	0.282	0.510	0.980
Pseudo High	899	6	53	922	1000	1000
(p-Value)	0.899	0.006	0.053	0.922	1.000	1.000
Pseudo High-Low Mean	-0.001	0.000	0.000	-0.001	-0.002	-0.001
Pseudo High-Low	961	4	52	889	1000	1000
(p-Value)	0.961	0.004	0.052	0.889	1.000	1.000
Pseudo High-All Mean	-0.001	0.008	-0.001	-0.002	-0.004	-0.011
Pseudo High-All	899	6	53	922	1000	1000
(p-Value)	0.899	0.006	0.053	0.922	1.000	1.000
Pseudo High-Index Mean	0.213	-0.747	-0.079	0.254	0.538	1.148
Pseudo High-Index	1000	0	0	1000	1000	1000
(p-Value)	1.000	0.000	0.000	1.000	1.000	1.000

Table 18d: SOCSCORE Low Book-to-Market Firms

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.062	-0.592	-0.147	0.067	0.277	0.733	0.583	2,141
SOCSCORE								
0-10	0.174	-0.853	-0.182	0.136	0.473	1.300	0.601	138
11-20	0.055	-0.697	-0.140	0.097	0.311	0.729	0.600	340
21-30	0.079	-0.605	-0.190	0.072	0.330	0.830	0.589	299
31-40	0.032	-0.668	-0.155	0.051	0.247	0.761	0.560	248
41-50	0.067	-0.561	-0.140	0.042	0.313	0.755	0.579	202
51-60	0.071	-0.425	-0.148	0.059	0.297	0.631	0.593	167
61-70	0.052	-0.562	-0.135	0.092	0.272	0.603	0.646	144
71-80	0.060	-0.517	-0.130	0.053	0.267	0.708	0.555	137
81-90	0.069	-0.456	-0.082	0.062	0.250	0.591	0.611	193
91-100	0.014	-0.442	-0.144	0.008	0.175	0.430	0.524	273
Low Score (0-20)	0.090	-0.742	-0.152	0.108	0.358	0.894	0.600	478
High Score (81-100)	0.037	-0.447	-0.119	0.031	0.206	0.496	0.560	466
High-Low	-0.053	0.295	0.033	-0.078	-0.151	-0.397		944
High-All	-0.025	0.144	0.028	-0.036	-0.070	-0.236		
High-Index	0.026	0.252	0.069	-0.003	-0.033	-0.158		

Resampling Result	Mean	5%	25%	Median	75%	95%		
SOCSCORE								
Pseudo Low Mean	0.062	-0.589	-0.145	0.067	0.278	0.727		
Pseudo Low	939	1	360	994	1000	1000		
(p-Value)	0.939	0.001	0.360	0.994	1.000	1.000		
Pseudo High Mean	0.063	-0.585	-0.145	0.067	0.278	0.727		
Pseudo High	933	2	55	986	1000	1000		
(p-Value)	0.933	0.002	0.055	0.986	1.000	1.000		
Pseudo High-Low Mean	0.001	0.003	0.001	0.000	0.000	0.001		
Pseudo High-Low	981	0	84	999	1000	1000		
(p-Value)	0.981	0.000	0.084	0.999	1.000	1.000		
Pseudo High-All Mean	0.001	0.006	0.002	0.000	0.001	-0.005		
Pseudo High-All	933	2	55	986	1000	1000		
(p-Value)	0.933	0.002	0.055	0.986	1.000	1.000		
Pseudo High-Index Mean	0.037	-0.837	-0.214	0.070	0.311	0.886		
Pseudo High-Index	748	0	0	1000	1000	1000		
(p-Value)	0.748	0.000	0.000	1.000	1.000	1.000		

5.2.6. Low BM: EESG Social

The average low SOCSCORE firm earns its investors 20.4% (one-year return), 9.9% (one-year market adjusted return), 28.6% (two-year return) and 9.0% (two-year market adjusted return), average return rates in the period 2002-2013. Of the 2,141 observations 138 firm years achieve an ENVSCORE between 0-10, and 340 a score between 11-20, totalling 478/2,141 or 22.3% of the segment. Although providing below segment average returns for one-year and one-year market adjusted returns, low CGVSCORE firms do not significantly outperform random selection for any return rate.

High SOCSCORE firms create an average return of 14.7% (one-year market return), 2.9% (one-year market adjusted return), 23.8% (two-year market return) and 3.7% (two-year market adjusted return). With below average segment returns, the high ENVSCORE portfolios fails to outperform the pseudo portfolios in all instances deeming it unfit to select winners.

In figures the high-low strategy earns its investor -5.6% (one-year return), -7.0% (one-year market adjusted return), -4.8% (two-year return) and -5.3% (two-year market adjusted return). Evaluating the pseudo high-low portfolios there is no evidence that the empirical portfolio is able to outperform randomly selected firms.

The high-all strategy earns its investor an average return of -3.1% (one-year return), -3.2% (one-year market adjusted return), -2.7% (two-year return) and -2.5% (two-year market adjusted return) deeming high CGVSCORE portfolios unable to select winners. The high-index strategy is not able to deliver significant higher returns for any return rates.

The SOCSCORE variable is, in the majority of the cases, unable to select winners from losers by using a buy-and-hold strategy shorting low scoring firms and longing high scoring firms. As no group show negative returns across return rates, shorting a stock is unadvised in the case that the stock increases in value. The 0-10 range produces the highest returns with an average return of 23.9% (one-year return), 12.7% (one-year market adjusted return), 37.0% (two-year return), and 17.4% (two-year market adjusted return) at the cost of sample size. Investors are advised to take long positions in SOCSCORE stocks in the range of0-10 when available. Investors are further advised against taking short positions based on SOSCORE as no sub group is able to display significant negative returns.

Table 19a: aEESG Low Book-to-Market Firms

One-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.179	-0.340	0.004	0.178	0.347	0.710	0.753	2,141
aEESG								
0-10	0.458	0.183	0.298	0.440	0.610	0.746	1.000	3
11-20	0.120	-0.545	-0.075	0.179	0.421	0.673	0.726	62
21-30	0.207	-0.423	-0.041	0.183	0.417	0.889	0.708	219
31-40	0.187	-0.379	0.000	0.164	0.396	0.772	0.748	409
41-50	0.206	-0.314	0.007	0.212	0.380	0.773	0.759	352
51-60	0.160	-0.279	-0.016	0.164	0.332	0.646	0.710	255
61-70	0.195	-0.365	0.064	0.196	0.358	0.670	0.822	208
71-80	0.190	-0.298	0.061	0.188	0.339	0.602	0.801	191
81-90	0.136	-0.309	-0.006	0.155	0.278	0.490	0.742	271
91-100	0.144	-0.149	0.014	0.143	0.285	0.463	0.760	171
Low Score (0-20)	0.135	-0.511	-0.058	0.192	0.430	0.676	0.738	65
High Score (81-100)	0.139	-0.247	0.002	0.150	0.281	0.480	0.749	442
High-Low	0.004	0.265	0.060	-0.041	-0.149	-0.197		507
High-All	-0.039	0.093	-0.003	-0.028	-0.066	-0.230		
High-Index	0.050	0.333	0.080	0.022	-0.015	-0.137		

Resampling Result	Mean	5%	25%	Median	75%	95%		
aEESG								
Pseudo Low Mean	0.178	-0.320	0.009	0.177	0.346	0.676		
Pseudo Low	128	52	70	673	939	542		
(p-Value)	0.128	0.052	0.070	0.673	0.939	0.542		
Pseudo High Mean	0.179	-0.337	0.006	0.177	0.347	0.703		
Pseudo High	998	9	561	987	1000	1000		
(p-Value)	0.998	0.009	0.561	0.987	1.000	1.000		
Pseudo High-Low Mean	0.001	-0.018	-0.003	0.000	0.001	0.027		
Pseudo High-Low	483	14	86	860	1000	964		
(p-Value)	0.483	0.014	0.086	0.860	1.000	0.964		
Pseudo High-All Mean	0.000	0.003	0.002	-0.001	0.000	-0.006		
Pseudo High-All	998	9	561	987	1000	1000		
(p-Value)	0.998	0.009	0.561	0.987	1.000	1.000		
Pseudo High-Index Mean	0.129	-0.670	-0.074	0.156	0.363	0.840		
Pseudo High-Index	1000	0	0	1000	1000	1000		
(p-Value)	1.000	0.000	0.000	1.000	1.000	1.000		

Table 19b: aEESG Low Book-to-Market Firms

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.061	-0.386	-0.103	0.044	0.219	0.545	0.581	2,141
aEESG								
0-10	0.296	0.104	0.159	0.229	0.399	0.536	1.000	3
11-20	0.021	-0.593	-0.110	0.049	0.257	0.479	0.565	62
21-30	0.087	-0.476	-0.138	0.078	0.290	0.765	0.575	219
31-40	0.078	-0.377	-0.117	0.032	0.275	0.607	0.570	409
41-50	0.092	-0.382	-0.081	0.086	0.244	0.621	0.622	352
51-60	0.043	-0.358	-0.140	0.024	0.208	0.518	0.541	255
61-70	0.066	-0.399	-0.082	0.045	0.217	0.443	0.601	208
71-80	0.064	-0.344	-0.062	0.057	0.174	0.420	0.634	191
81-90	0.020	-0.317	-0.102	0.019	0.143	0.357	0.550	271
91-100	0.015	-0.281	-0.114	0.034	0.152	0.320	0.550	171
Low Score (0-20)	0.034	-0.561	-0.097	0.057	0.263	0.482	0.585	65
High Score (81-100)	0.018	-0.303	-0.107	0.025	0.147	0.343	0.550	442
High-Low	-0.015	0.258	-0.009	-0.033	-0.117	-0.139		507
High-All	-0.043	0.083	-0.004	-0.019	-0.073	-0.202		
High-Index	0.015	0.209	0.041	0.011	-0.026	-0.138		

Resampling Result	Mean	5%	25%	Median	75%	95%		
aEESG								
Pseudo Low Mean	0.061	-0.366	-0.100	0.045	0.213	0.525		
Pseudo Low	219	31	531	677	877	370		
(p-Value)	0.219	0.031	0.531	0.677	0.877	0.370		
Pseudo High Mean	0.061	-0.386	-0.103	0.045	0.217	0.547		
Pseudo High	1000	1	590	951	1000	1000		
(p-Value)	1.000	0.001	0.590	0.951	1.000	1.000		
Pseudo High-Low Mean	0.000	-0.020	-0.003	0.000	0.004	0.022		
Pseudo High-Low	660	5	571	818	987	909		
(p-Value)	0.660	0.005	0.571	0.818	0.987	0.909		
Pseudo High-All Mean	0.000	0.000	-0.001	0.001	-0.003	0.002		
Pseudo High-All	1000	1	590	951	1000	1000		
(p-Value)	1.000	0.001	0.590	0.951	1.000	1.000		
Pseudo High-Index Mean	0.046	-0.594	-0.145	0.034	0.243	0.685		
Pseudo High-Index	994	0	0	971	1000	1000		
(p-Value)	0.994	0.000	0.000	0.971	1.000	1.000		

Table 19c: aEESG Low Book-to-Market Firms

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.264	-0.485	0.038	0.284	0.515	0.991	0.779	2,141
aEESG								
0-10	0.750	0.582	0.588	0.595	0.835	1.027	1.000	3
11-20	0.335	-0.544	0.079	0.287	0.609	1.190	0.823	62
21-30	0.325	-0.621	0.054	0.363	0.636	1.333	0.808	219
31-40	0.256	-0.572	-0.013	0.284	0.526	1.086	0.743	409
41-50	0.273	-0.490	0.015	0.287	0.545	1.013	0.759	352
51-60	0.219	-0.470	-0.024	0.240	0.459	0.852	0.729	255
61-70	0.294	-0.437	0.080	0.316	0.554	0.955	0.803	208
71-80	0.266	-0.461	0.064	0.300	0.506	0.832	0.796	191
81-90	0.238	-0.395	0.071	0.276	0.446	0.810	0.801	271
91-100	0.224	-0.254	0.100	0.230	0.435	0.640	0.842	171
Low Score (0-20)	0.354	-0.492	0.103	0.301	0.619	1.182	0.831	65
High Score (81-100)	0.233	-0.340	0.082	0.258	0.441	0.745	0.817	442
High-Low	-0.121	0.151	-0.021	-0.043	-0.178	-0.438		507
High-All	-0.031	0.145	0.044	-0.025	-0.073	-0.246		
High-Index	0.045	0.297	0.128	0.034	-0.026	-0.151		

Resampling Result	Mean	5%	25%	Median	75%	95%
aEESG						
Pseudo Low Mean	0.264	-0.458	0.035	0.280	0.511	0.951
Pseudo Low	935	377	861	641	963	933
(p-Value)	0.935	0.377	0.861	0.641	0.963	0.933
Pseudo High Mean	0.264	-0.476	0.038	0.282	0.511	0.982
Pseudo High	946	2	17	871	1000	1000
(p-Value)	0.946	0.002	0.017	0.871	1.000	1.000
Pseudo High-Low Mean	0.000	-0.017	0.002	0.002	0.000	0.031
Pseudo High-Low	974	138	605	801	995	992
(p-Value)	0.974	0.138	0.605	0.801	0.995	0.992
Pseudo High-All Mean	0.000	0.009	0.000	-0.001	-0.003	-0.008
Pseudo High-All	946	2	17	871	1000	1000
(p-Value)	0.946	0.002	0.017	0.871	1.000	1.000
Pseudo High-Index Mean	0.219	-0.773	-0.091	0.248	0.537	1.133
Pseudo High-Index	1000	0	0	1000	1000	1000
(p-Value)	1.000	0.000	0.000	1.000	1.000	1.000

Table 19d: aEESG Low Book-to-Market Firms

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.062	-0.592	-0.147	0.067	0.277	0.733	0.583	2,141
aEESG								
0-10	0.496	0.354	0.368	0.385	0.569	0.716	1.000	3
11-20	0.123	-0.684	-0.132	0.104	0.337	0.737	0.629	62
21-30	0.108	-0.874	-0.152	0.138	0.390	1.092	0.635	219
31-40	0.065	-0.684	-0.170	0.072	0.283	0.830	0.567	409
41-50	0.077	-0.618	-0.145	0.072	0.328	0.779	0.591	352
51-60	0.024	-0.578	-0.191	0.032	0.242	0.685	0.549	255
61-70	0.081	-0.525	-0.140	0.087	0.310	0.715	0.596	208
71-80	0.066	-0.445	-0.112	0.071	0.249	0.570	0.634	191
81-90	0.026	-0.458	-0.121	0.038	0.193	0.490	0.557	271
91-100	0.021	-0.411	-0.123	0.013	0.181	0.444	0.532	171
Low Score (0-20)	0.140	-0.636	-0.109	0.117	0.347	0.736	0.646	65
High Score (81-100)	0.024	-0.440	-0.122	0.028	0.189	0.472	0.548	442
High-Low	-0.116	0.196	-0.013	-0.088	-0.159	-0.264		507
High-All	-0.038	0.152	0.025	-0.038	-0.088	-0.261		
High-Index	0.013	0.260	0.066	-0.006	-0.050	-0.183		

Resampling Result	Mean	5%	25%	Median	75%	95%
aEESG						
Pseudo Low Mean	0.063	-0.556	-0.144	0.066	0.274	0.695
Pseudo Low	935	261	745	849	907	657
(p-Value)	0.935	0.261	0.745	0.849	0.907	0.657
Pseudo High Mean	0.061	-0.587	-0.147	0.066	0.276	0.725
Pseudo High	982	1	63	984	1000	1000
(p-Value)	0.982	0.001	0.063	0.984	1.000	1.000
Pseudo High-Low Mean	-0.001	-0.031	-0.003	0.000	0.002	0.031
Pseudo High-Low	986	85	567	968	999	964
(p-Value)	0.986	0.085	0.567	0.968	0.999	0.964
Pseudo High-All Mean	-0.001	0.005	0.000	-0.001	-0.001	-0.007
Pseudo High-All	982	1	63	984	1000	1000
(p-Value)	0.982	0.001	0.063	0.984	1.000	1.000
Pseudo High-Index Mean	0.048	-0.847	-0.213	0.072	0.326	0.908
Pseudo High-Index	974	0	0	1000	1000	1000
(p-Value)	0.974	0.000	0.000	1.000	1.000	1.000

Table 20a: aESG Low Book-to-Market Firms

One-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.179	-0.340	0.004	0.178	0.347	0.710	0.753	2,141
aESG								
0-10	0.402	0.053	0.214	0.414	0.597	0.744	1.000	3
11-20	0.112	-0.464	-0.100	0.148	0.388	0.732	0.662	65
21-30	0.183	-0.343	-0.026	0.161	0.426	0.805	0.717	205
31-40	0.199	-0.408	0.000	0.195	0.380	0.803	0.749	495
41-50	0.198	-0.317	0.012	0.189	0.370	0.757	0.760	350
51-60	0.172	-0.309	-0.012	0.166	0.314	0.675	0.711	201
61-70	0.184	-0.187	0.056	0.210	0.341	0.618	0.811	175
71-80	0.193	-0.272	0.070	0.191	0.350	0.628	0.829	164
81-90	0.160	-0.292	0.017	0.173	0.299	0.541	0.761	293
91-100	0.123	-0.283	-0.010	0.123	0.254	0.482	0.726	190
Low Score (0-20)	0.125	-0.441	-0.086	0.159	0.397	0.732	0.676	68
High Score (81-100)	0.146	-0.288	0.007	0.153	0.282	0.518	0.747	483
High-Low	0.021	0.153	0.092	-0.006	-0.115	-0.214		551
High-All	-0.033	0.051	0.002	-0.025	-0.065	-0.192		
High-Index	0.056	0.291	0.085	0.024	-0.015	-0.098		

Resampling Result	Mean	5%	25%	Median	75%	95%		
aESG								
Pseudo Low Mean	0.182	-0.309	0.012	0.179	0.348	0.682		
Pseudo Low	83	122	26	308	855	672		
(p-Value)	0.083	0.122	0.026	0.308	0.855	0.672		
Pseudo High Mean	0.179	-0.339	0.006	0.178	0.347	0.700		
Pseudo High	995	58	446	990	1000	1000		
(p-Value)	0.995	0.058	0.446	0.990	1.000	1.000		
Pseudo High-Low Mean	-0.003	-0.030	-0.006	-0.001	0.000	0.018		
Pseudo High-Low	265	52	33	570	990	972		
(p-Value)	0.265	0.052	0.033	0.570	0.990	0.972		
Pseudo High-All Mean	0.000	0.001	0.002	0.000	0.000	-0.010		
Pseudo High-All	995	58	446	990	1000	1000		
(p-Value)	0.995	0.058	0.446	0.990	1.000	1.000		
Pseudo High-Index Mean	0.122	-0.630	-0.079	0.153	0.362	0.798		
Pseudo High-Index	1000	0	0	1000	1000	1000		
(p-Value)	1.000	0.000	0.000	1.000	1.000	1.000		

Table 20b: aESG Low Book-to-Market Firms

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.061	-0.386	-0.103	0.044	0.219	0.545	0.581	2,141
aESG								
0-10	0.257	-0.032	0.100	0.266	0.418	0.540	0.667	3
11-20	0.039	-0.516	-0.121	0.066	0.276	0.513	0.585	65
21-30	0.051	-0.503	-0.144	0.037	0.267	0.579	0.566	205
31-40	0.094	-0.375	-0.099	0.060	0.268	0.643	0.610	495
41-50	0.084	-0.376	-0.102	0.069	0.237	0.622	0.577	350
51-60	0.056	-0.400	-0.105	0.038	0.190	0.507	0.547	201
61-70	0.058	-0.352	-0.081	0.043	0.200	0.451	0.594	175
71-80	0.048	-0.392	-0.083	0.051	0.200	0.392	0.610	164
81-90	0.029	-0.322	-0.102	0.023	0.152	0.339	0.567	293
91-100	0.017	-0.311	-0.115	0.034	0.152	0.399	0.542	190
Low Score (0-20)	0.048	-0.495	-0.111	0.075	0.283	0.514	0.588	68
High Score (81-100)	0.024	-0.318	-0.107	0.028	0.152	0.362	0.557	483
High-Low	-0.024	0.177	0.004	-0.048	-0.131	-0.152		551
High-All	-0.037	0.068	-0.004	-0.017	-0.068	-0.182		
High-Index	0.021	0.193	0.041	0.014	-0.021	-0.119		

Resampling Result	Mean	5%	25%	Median	75%	95%		
aESG								
Pseudo Low Mean	0.058	-0.373	-0.102	0.043	0.211	0.526		
Pseudo Low	398	91	399	837	951	499		
(p-Value)	0.398	0.091	0.399	0.837	0.951	0.499		
Pseudo High Mean	0.061	-0.387	-0.103	0.045	0.217	0.547		
Pseudo High	1000	8	614	945	1000	1000		
(p-Value)	1.000	0.008	0.614	0.945	1.000	1.000		
Pseudo High-Low Mean	0.003	-0.014	-0.001	0.001	0.006	0.021		
Pseudo High-Low	762	36	443	917	994	927		
(p-Value)	0.762	0.036	0.443	0.917	0.994	0.927		
Pseudo High-All Mean	0.000	-0.001	0.000	0.001	-0.002	0.002		
Pseudo High-All	1000	8	614	945	1000	1000		
(p-Value)	1.000	0.008	0.614	0.945	1.000	1.000		
Pseudo High-Index Mean	0.040	-0.580	-0.144	0.031	0.238	0.666		
Pseudo High-Index	937	0	0	945	1000	1000		
(p-Value)	0.937	0.000	0.000	0.945	1.000	1.000		

Table 20c: aESG Low Book-to-Market Firms

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.264	-0.485	0.038	0.284	0.515	0.991	0.779	2,141
aESG								
0-10	0.659	0.116	0.450	0.869	0.972	1.055	1.000	3
11-20	0.298	-0.567	0.062	0.304	0.580	1.062	0.785	65
21-30	0.265	-0.721	0.016	0.294	0.579	1.013	0.776	205
31-40	0.276	-0.536	-0.002	0.297	0.548	1.113	0.749	495
41-50	0.270	-0.502	0.003	0.281	0.527	1.052	0.751	350
51-60	0.265	-0.423	0.060	0.279	0.482	0.922	0.791	201
61-70	0.262	-0.477	0.060	0.335	0.527	0.801	0.789	175
71-80	0.251	-0.592	0.087	0.276	0.511	0.836	0.823	164
81-90	0.266	-0.386	0.077	0.308	0.469	0.811	0.799	293
91-100	0.214	-0.300	0.066	0.223	0.400	0.700	0.816	190
Low Score (0-20)	0.314	-0.536	0.079	0.329	0.598	1.062	0.794	68
High Score (81-100)	0.245	-0.352	0.072	0.275	0.442	0.767	0.805	483
High-Low	-0.069	0.184	-0.007	-0.054	-0.156	-0.295		551
High-All	-0.019	0.133	0.035	-0.009	-0.073	-0.223		
High-Index	0.058	0.285	0.119	0.051	-0.026	-0.128		

Resampling Result	Mean	5%	25%	Median	75%	95%		
aESG								
Pseudo Low Mean	0.261	-0.453	0.034	0.277	0.506	0.951		
Pseudo Low	811	270	776	836	935	773		
(p-Value)	0.811	0.270	0.776	0.836	0.935	0.773		
Pseudo High Mean	0.265	-0.477	0.038	0.284	0.512	0.984		
Pseudo High	845	5	43	736	1000	1000		
(p-Value)	0.845	0.005	0.043	0.736	1.000	1.000		
Pseudo High-Low Mean	0.003	-0.024	0.004	0.007	0.006	0.033		
Pseudo High-Low	886	95	549	868	995	977		
(p-Value)	0.886	0.095	0.549	0.868	0.995	0.977		
Pseudo High-All Mean	0.000	0.008	0.000	0.000	-0.002	-0.007		
Pseudo High-All	845	5	43	736	1000	1000		
(p-Value)	0.845	0.005	0.043	0.736	1.000	1.000		
Pseudo High-Index Mean	0.207	-0.762	-0.081	0.233	0.538	1.112		
Pseudo High-Index	1000	0	0	1000	1000	1000		
(p-Value)	1.000	0.000	0.000	1.000	1.000	1.000		

Table 20d: aESG Low Book-to-Market Firms

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.062	-0.592	-0.147	0.067	0.277	0.733	0.583	2,141
aESG								
0-10	0.384	-0.074	0.199	0.540	0.646	0.732	0.667	3
11-20	0.121	-0.684	-0.139	0.106	0.362	0.751	0.646	65
21-30	0.043	-0.735	-0.157	0.091	0.308	0.691	0.590	205
31-40	0.086	-0.683	-0.161	0.103	0.330	0.874	0.596	495
41-50	0.084	-0.637	-0.142	0.049	0.305	0.843	0.589	350
51-60	0.060	-0.602	-0.113	0.042	0.276	0.705	0.572	201
61-70	0.054	-0.637	-0.140	0.099	0.274	0.534	0.594	175
71-80	0.039	-0.499	-0.150	0.073	0.274	0.601	0.561	164
81-90	0.038	-0.455	-0.114	0.055	0.204	0.551	0.577	293
91-100	0.023	-0.411	-0.143	0.015	0.188	0.469	0.537	190
Low Score (0-20)	0.133	-0.657	-0.124	0.125	0.375	0.750	0.647	68
High Score (81-100)	0.032	-0.438	-0.125	0.040	0.197	0.518	0.561	483
High-Low	-0.101	0.219	-0.001	-0.086	-0.177	-0.232		551
High-All	-0.030	0.154	0.022	-0.027	-0.079	-0.214		
High-Index	0.021	0.262	0.063	0.006	-0.042	-0.137		

Resampling Result	Mean	5%	25%	Median	75%	95%		
aESG								
Pseudo Low Mean	0.062	-0.561	-0.146	0.066	0.274	0.693		
Pseudo Low	920	233	648	886	969	661		
(p-Value)	0.920	0.233	0.648	0.886	0.969	0.661		
Pseudo High Mean	0.061	-0.589	-0.147	0.065	0.277	0.726		
Pseudo High	966	0	89	949	1000	1000		
(p-Value)	0.966	0.000	0.089	0.949	1.000	1.000		
Pseudo High-Low Mean	-0.001	-0.027	-0.001	-0.001	0.002	0.033		
Pseudo High-Low	970	58	482	962	998	965		
(p-Value)	0.970	0.058	0.482	0.962	0.998	0.965		
Pseudo High-All Mean	-0.001	0.003	0.000	-0.001	0.000	-0.007		
Pseudo High-All	966	0	89	949	1000	1000		
(p-Value)	0.966	0.000	0.089	0.949	1.000	1.000		
Pseudo High-Index Mean	0.040	-0.850	-0.209	0.060	0.318	0.862		
Pseudo High-Index	875	0	0	999	1000	1000		
(p-Value)	0.875	0.000	0.000	0.999	1.000	1.000		

5.2.7. Low BM: Average EESG and Average ESG

Of the 2,141 observations from 2002-2013 three firm years achieve an EESG between 0-10 and 62 a score between 11-20, totalling 65/2,141 or 3.0% of the index. ESG observations include three firms achieving 0-10 and 65 companies scoring in the range 11-20, totalling 68/2,141 or 3.2% of the index. The average low EESG firm earns its investors 13.5% (one-year return), 3.4% (one-year market adjusted return), 35.4% (two-year return) and 14.0% (two-year market adjusted return), average return rates in the period 2002-2013. Low ESG firms achieves a return of 12.5% (one-year return), 4.8% (one-year market adjusted return), 31.4% (two-year return) and 13.3% (two-year market adjusted return). Although displaying below average returns, none of the empirical portfolios are able to significantly outperform random selection.

EESG score firms in the range of 81-90 total 271 and firms scoring between 91-100 171, totalling 442, or 20.6% of the segment. In the regards to ESG firms the number of companies in the range between 81-90 are 293 and firms scoring 91-100 190, totalling 483 or 22.6% of the index. High EESG firms create an average return of 13.9% (one-year market return), 1.8% (one-year market adjusted return), 23.3% (two-year market return) and 2.4% (two-year market adjusted return), while high ESG firms deliver an average return of 14.6% (one-year market return), 2.4% (one-year market adjusted return), 24.5% (two-year market return) and 3.2% (two-year market adjusted return).

Due to the empirical low EESG and ESG portfolios showing higher returns than high EESG and ESG firms, shorting low EESG and ESG firms and longing high EESG and ESG firms is devastating to an investor. This is reflected in pseudo portfolios where, in regards to means the empirical portfolios are beaten by random selection in over 50 of the 1,000 cases resulting in the rejection of the null hypothesis. The rejection of the null is true for the pseudo low, pseudo high, pseudo high-low, pseudo high-all and pseudo high-index portfolio means.

Last, in regards to the segment a summary including main results, winners and losers is presented for one-year market returns and one-year market adjusted returns.

Table 21: Low Book-to-Market Firms Summary FSCORE, EESG, Winners and Losers

	One-Year Market Return				One-Year Market Adjusted Return		
Rank	Variable	Mean Return	n	Rank	Variable	Mean Return	n
1	Low BM	0.179	2,141	1	Low BM	0.061	2,141
2	Index	0.089	6,264	2	Index	0.004	6,264

Low Score

Rank	Variable	Mean Return	n	Rank	Variable	Mean Return	n
1	FSCORE	0.120	32	1	CGVSCORE	0.026	44
2	aESG	0.125	68	2	FSCORE	0.032	32
3	CGVSCORE	0.127	44	3	aEESG	0.034	65
4	aEESG	0.135	65	4	aESG	0.048	68
5	ENVSCORE	0.182	882	5	ENVSCORE	0.074	882
6	ECNSCORE	0.190	332	6	ECNSCORE	0.079	332
7	SOCSCORE	0.204	478	7	SOCSCORE	0.099	478

High Score

Rank	Variable	Mean Return	n	Rank	Variable	Mean Return	n
1	FSCORE	0.208*	385	1	FSCORE	0.092*	385
2	ECNSCORE	0.165	613	2	ECNSCORE	0.049	613
3	CGVSCORE	0.162	873	3	CGVSCORE	0.044	873
4	SOCSCORE	0.147	466	4	SOCSCORE	0.029	466
5	aESG	0.146	483	5	aESG	0.024	483
6	ENVSCORE	0.142	535	6	aEESG	0.018	442
7	aEESG	0.139	442	7	ENVSCORE	0.016	535

Losers

Rank	Variable	Mean Return	n	Rank	Variable	Mean Return	n
1	FSCORE (2)	0.051	22	1	ECNSCORE (31-40)	-0.012	164
2	CGVSCORE (0-10)	0.092	10	2	FSCORE (2)	-0.007	22
3	ECNSCORE (31-40)	0.111	164	3	CGVSCORE (0-10)	0.004	10
4	aESG (11-20)	0.112	65	4	FSCORE (5)	0.008	399
5	aEESG (11-20)	0.120	62	5	ENVSCORE (0-10)	0.010	109
6	aESG (91-100)	0.123	190	6	ENVSCORE (91-100)	0.010	294
7	ENVSCORE (91-100)	0.127	294	7	aEESG (91-100)	0.015	171

Winners

Rank	Variable	Mean Return	n	Rank	Variable	Mean Return	n
1	aEESG (0-10)	0.458	3	1	aEESG (0-10)	0.296	3
2	aESG (0-10)	0.402	3	2	aESG (0-10)	0.257	3
3	CGVSCORE (31-40)	0.282	42	3	CGVSCORE (31-40)	0.174	42
4	FSCORE (1)	0.270	10	4	SOCSCORE (0-10)	0.127	138
5	ENVSCORE (41-50)	0.260	83	5	ENVSCORE (41-50)	0.126	83
6	FSCORE (9)	0.239	44	6	FSCORE (9)	0.122	44
6	SOCSCORE (0-10)	0.239	138	7	FSCORE (1)	0.119	10

* Significant result. One-sided resampling test. Critical value 50. Rejects the null hypothesis if p-value > 0.05.
Tests have been conducted for low score, high score, high-low, high-all and high-index portfolios.

5.2.8. Summary: Low Book-to-Market Firms

Although able to select winners, FSCORE and EESG variables are unable to separate losers from the low book-to-market segment. This again impacts return rates as losers are included in low, middle, and high scoring segments. The low Book-to-Market segment shows an average one-year market return of 17.9% and one-year market adjusted return of 6.1%, well above the index. Low score returns (FSCORE 1-2, and EESG score 0-20) yield average positive returns unsuccessfully separating losers from winners. The high score returns (FSCORE 8-9, and EESG score 80-100) yield significant returns in the face of FSCORE. The other variables deliver slightly above, on par, or below the segment average. Losers ranges are also heavily populated by positive returns, with the exception of ECNSCORE 31-40 and FSCORE 2 yielding -1.2% and -0.7% for one-year and one-year market adjusted returns respectively.

The top two variables of the winners list are aEESG 0-10 and aESG 0-10 with very high returns of 45.8% and 40.2% for one-year market returns, and 29.6% and 25.7% for one-year market adjusted returns. However, limited to three observations from 2002-2013 investors are advised to long the firms when available as well as focus on CGVSCORE 31-40, following the list down when considering the low book-to-market segment of the LA4CTYUS index. Next, the middle book-to-market segment is under the scope.

5.3. Empirical Results: Middle Book-to-Market Firms

Table 22: Financial Characteristics: Middle (Percentile 33-66) Book-to-Market Firms (2,052 Firm Year Observations between 2002-2013)

	Mean	Median	Standard Deviation	Proportion with Positive Signal
MVE	18410.808	6182.468	40199.957	1.000
TA	16072.168	5996.960	31214.721	1.000
Book-to-Market-ratio	0.399	0.386	0.099	1.000
F1 ROA	0.067	0.067	0.064	0.920
F2 CFO	0.111	0.108	0.069	0.966
F3 cROA	0.004	0.002	0.076	0.550
F4 ACC	0.044	0.039	0.024	1.000
F5 cLEV	0.001	-0.003	0.076	0.385
F6 cLIQ	-0.002	0.012	1.478	0.522
F7 EQ	-3.186	0.143	71.862	0.531
F8 cMAR	4.233	0.162	156.546	0.544
F9 cTURN	-0.023	-0.001	0.250	0.494
ECNSCORE	57.594	60.310	26.517	1.000
ENVSCORE	47.388	39.425	31.634	1.000
CGVSCORE	75.648	78.535	15.410	1.000
SOCSCORE	50.465	49.725	28.338	1.000
Average EESG	57.774	55.054	21.077	1.000
Average ESG	57.834	54.308	21.971	1.000

The average firm in the low bm segment has a market value of equity of 21,931 million USD, while the median is 8,040 million USD and the standard deviation 41,670 million USD. The high standard deviation signals a large spread in firm size, negatively skewed, given the proportional signal of 1.000. Total assets average 10,994 million USD, with a median of 4,249 million USD and a standard deviation of 19,475 million USD. Again, with a proportional signal of 1.000, the distribution is expected to be negatively skewed. The average bm-ratio is 0.142, median 0.184 and standard deviation 0.263. F1 ROA average 0.109, F2 CFO 0.154, F3 cROA 0.09, F5 cLEV 0.007, F6 cLIQ -0.024, F7 EQ -0.909, F8 cMAR 0.720 and F9 cTURN -0.010.

The average low bm firm achieves the following EESG scores; ECNSCORE 56.46, EVNSCORE 43.53, CGVSCORE 72.67 and SOCSCORE of 47.73. The average EESG score is 55.10 and average ESG 54.64.

Next, Spearman's rho correlations for the low book-to-market segment is examined

Table 23: Spearman's rho Correlations: Middle Book-to-Market Firms (Percentile 33-66) (2,052 Firm Years between 2002-2013)									
	F1 ROA	F2 CFO	F3 cROA	F4 ACC	F5 cLEV	F6 cLIQ	F7 EQ	F8 cMAR	F9 cTURN	FSCORE
1YR RET	-.019	-.001	.100**		.047*	.063**	-.175**	.109**	.014	.053*
2YR RET	-.004	.021	.034		.065**	.082**	-.130**	.057*	-.073**	.007
1YRMADJ	.021	.023	.125**		.025	.068**	-.123**	.090**	.051*	.090**
2YRMADJ	.047*	.051*	.068**		.041	.063**	-.068**	.046*	.000	.058**
F1 ROA	1.000	.633**	.153**		.073**	.088**	.140**	.102**	.040	.389**
F2 CFO		1.000	.119**		.047*	.070**	.089**	.090**	.038	.294**
F3 cROA			1.000		.010	.023	-.004	.249**	.439**	.672**
F4 ACC										
F5 cLEV					1.000	-.127**	-.044*	.019	-.116**	.270**
F6 cLIQ						1.000	-.085**	.018	-.080**	.279**
F7 EQ							1.000	-.089**	.020	.305**
F8 cMAR								1.000	.039	.463**
F9 cTURN									1.000	.487**
FSCORE										1.000
ECNSCORE										
ENVSCORE										
CGVSCORE										
SOCSCORE										
Average EESG										
Average ESG										
**. Correlation is significant at the 0.01 level (2-tailed).										
*. Correlation is significant at the 0.05 level (2-tailed).										

Table 23 - continued						
Panel A: Spearman's rho Correlations: Middle Book-to-Market Firms (Percentile 33-66) (2,052 Firm Years between 2002-2013)						
	ECNSCORE	ENVSCORE	CGVSCORE	SOCSCORE	Average EESG	Average ESG
1YR RET	-.012	.001	-.036	-.028	-.016	-.019
2YR RET	-.006	-.004	-.042	-.038	-.022	-.032
1YRMADJ	.017	-.007	-.012	-.032	-.011	-.024
2YRMADJ	.025	-.018	-.029	-.036	-.015	-.036
F1 ROA	.303**	.083**	.036	.125**	.186**	.102**
F2 CFO	.226**	.068**	.032	.069**	.136**	.070**
F3 cROA	.114**	.024	-.008	.009	.042	.011
F4 ACC						
F5 cLEV	.065**	-.031	-.040	-.031	-.006	-.039
F6 cLIQ	.082**	.052*	.032	.058**	.077**	.063**
F7 EQ	.161**	.173**	.130**	.237**	.219**	.220**
F8 cMAR	.025	-.006	-.037	-.024	-.008	-.026
F9 cTURN	.032	-.034	-.015	-.021	-.014	-.027
FSCORE	.231**	.077**	.029	.104**	.145**	.090**
ECNSCORE	1.000	.527**	.406**	.612**	.785**	.598**
ENVSCORE		1.000	.557**	.758**	.873**	.910**
CGVSCORE			1.000	.553**	.683**	.726**
SOCSCORE				1.000	.901**	.915**
Average EESG					1.000	.962**
Average ESG						1.000
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

5.3.1.   Middle BM: Spearman's rho Correlations

The FSCORE variable performs a low, but positive correlation of 0.053 and 0.090 with one-year and one-year market adjusted returns respectively. However, ranking third, beaten by F8 change in margins (rank 1) and F3 change in return on assets (rank 2). F8 achieves a correlation of 0.109 and 0.090 to one-year returns and one-year market adjusted returns, while F3 does 0.100 and 0.125 respectively. The FSCORE variables that show low, but significant correlations with one-year market returns and one-year market adjusted returns are F3 cROA, F5 cLEV, F6 cLIQ and F8 cMAR. F9 cTURN demonstrates significant correlation to 1YRMADJ, but insignificant, and lower correlation with 1YR RET. F7 EQ displays a negative correlation to market and market adjusted returns of -0.175 and -0.123. F1 ROA shows negative correlations with 1YR RET, but insignificant. For 1YRMARJ the correlation is positive, but not significant.

The ECNSCORE variable shows an insignificant low negative correlation with one-year market return, but positive, yet insignificant with one-year market adjusted return. ENVSCORE shows an insignificant positive correlation with 1YR RET, as well as insignificantly negative to 1YRMADJ. The remaining variables, CGVSCORE, SOCSCORE, aEESG and aESG display insignificant negative correlations with one-year and one-year market adjusted returns.

The governmental variable is the best performing ESG variable with correlations of -0.036 one-year market return and -0.012 one-year market adjusted return. Second, the social variable performs -0.028 and -0.032. Third, the environmental variable shows 0.001 and -0.007. Last, the economic variable shows as correlation of -0.012 and 0.017. Combining the environmental, social and governmental variables the average ESG correlation is -0.019 for one-year market returns and -0.024 for one-year market adjusted return rates beating the aEESG correlations of -0.016 and -0.011 respectively.

The negative correlations in regard to return rates raise scepticism towards the ESG variables and their ability to produce excess returns. It appears an increase in ESG variables significantly reduces return rates. The following chapter examines a buy-and-hold strategy longing high FSCORE (8-9) firms or EESG (81-100) firms and shorting low FSCORE (1-2) or EESG (0-20) firms.

Table 24a: FSCORE Middle Book-to-Market Firms

One-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.136	-0.414	-0.019	0.155	0.308	0.626	0.728	2,052
FSCORE								
0	-	-	-	-	-	-		0
1	-0.051	-1.289	-0.745	0.218	0.555	0.933	0.667	6
2	-0.009	-1.274	-0.243	0.055	0.374	0.821	0.542	24
3	0.152	-0.405	-0.086	0.166	0.404	0.712	0.640	50
4	0.103	-0.544	-0.076	0.136	0.272	0.693	0.665	173
5	0.138	-0.363	-0.033	0.148	0.302	0.642	0.709	426
6	0.115	-0.431	-0.025	0.135	0.298	0.559	0.714	538
7	0.163	-0.301	0.013	0.172	0.322	0.613	0.759	507
8	0.153	-0.291	0.026	0.168	0.299	0.559	0.783	277
9	0.169	-0.232	0.026	0.206	0.274	0.547	0.824	51
Low Score (1-2)	-0.017	-1.277	-0.344	0.087	0.410	0.843	0.567	30
High Score (8-9)	0.155	-0.282	0.026	0.174	0.295	0.557	0.790	328
High-Low	0.172	0.996	0.369	0.086	-0.115	-0.286		358
High-All	0.019	0.132	0.044	0.019	-0.013	-0.069		
High-Index	0.066	0.298	0.104	0.045	-0.001	-0.059		

Resampling Result	Mean	5%	25%	Median	75%	95%		
FSCORE								
Pseudo Low Mean	0.137	-0.346	-0.013	0.153	0.304	0.575		
Pseudo Low	4	0	0	121	955	956		
(p-Value)	0.004	0.000	0.000	0.121	0.955	0.956		
Pseudo High Mean	0.136	-0.404	-0.017	0.155	0.308	0.617		
Pseudo High	119	11	15	81	785	901		
(p-Value)	0.119	0.011	0.015	0.081	0.785	0.901		
Pseudo High-Low Mean	-0.001	-0.058	-0.005	0.002	0.004	0.042		
Pseudo High-Low	1	0	0	73	968	978		
(p-Value)	0.001	0.000	0.000	0.073	0.968	0.978		
Pseudo High-All Mean	0.000	0.010	0.001	0.000	0.000	-0.009		
Pseudo High-All	119	11	15	81	785	901		
(p-Value)	0.119	0.011	0.015	0.081	0.785	0.901		
Pseudo High-Index Mean	0.070	-0.701	-0.122	0.110	0.309	0.676		
Pseudo High-Index	589	0	0	1000	1000	1000		
(p-Value)	0.589	0.000	0.000	1.000	1.000	1.000		

Table 24b: FSCORE Middle Book-to-Market Firms

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.028	-0.422	-0.118	0.032	0.173	0.479	0.558	2,052
FSCORE								
0	-	-	-	-	-	-		0
1	-0.194	-1.302	-0.699	0.036	0.311	0.648	0.500	6
2	-0.179	-1.349	-0.448	-0.130	0.143	0.673	0.417	24
3	0.016	-0.523	-0.241	0.014	0.283	0.463	0.540	50
4	-0.019	-0.541	-0.163	-0.024	0.161	0.474	0.462	173
5	0.013	-0.403	-0.149	0.027	0.159	0.418	0.547	426
6	0.023	-0.414	-0.108	0.024	0.153	0.451	0.541	538
7	0.057	-0.383	-0.085	0.056	0.190	0.528	0.594	507
8	0.055	-0.321	-0.075	0.040	0.163	0.473	0.603	277
9	0.077	-0.276	-0.046	0.058	0.207	0.464	0.647	51
Low Score (1-2)	-0.182	-1.339	-0.499	-0.097	0.177	0.668	0.433	30
High Score (8-9)	0.058	-0.314	-0.070	0.043	0.170	0.471	0.610	328
High-Low	0.240	1.026	0.428	0.140	-0.007	-0.196		358
High-All	0.030	0.109	0.047	0.011	-0.003	-0.008		
High-Index	0.055	0.198	0.077	0.029	-0.002	-0.010		

Resampling Result	Mean	5%	25%	Median	75%	95%		
FSCORE								
Pseudo Low Mean	0.029	-0.379	-0.109	0.030	0.170	0.436		
Pseudo Low	0	0	0	5	584	971		
(p-Value)	0.000	0.000	0.000	0.005	0.584	0.971		
Pseudo High Mean	0.027	-0.417	-0.117	0.030	0.173	0.474		
Pseudo High	15	2	3	123	553	543		
(p-Value)	0.015	0.002	0.003	0.123	0.553	0.543		
Pseudo High-Low Mean	-0.001	-0.039	-0.007	-0.001	0.003	0.038		
Pseudo High-Low	0	0	0	2	596	963		
(p-Value)	0.000	0.000	0.000	0.002	0.596	0.963		
Pseudo High-All Mean	-0.001	0.005	0.001	-0.002	0.000	-0.005		
Pseudo High-All	15	2	3	123	553	543		
(p-Value)	0.015	0.002	0.003	0.123	0.553	0.543		
Pseudo High-Index Mean	-0.028	-0.615	-0.194	0.001	0.175	0.484		
Pseudo High-Index	0	0	0	8	1000	1000		
(p-Value)	0.000	0.000	0.000	0.008	1.000	1.000		

Table 24c: FSCORE Middle Book-to-Market Firms

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.230	-0.501	0.006	0.265	0.492	0.903	0.754	2,052
FSCORE								
0	-	-	-	-	-	-	-	0
1	0.277	-0.911	-0.256	0.511	0.572	1.352	0.667	6
2	0.022	-1.892	-0.298	0.167	0.503	1.177	0.625	24
3	0.175	-0.631	-0.134	0.135	0.550	0.956	0.640	50
4	0.207	-0.499	-0.098	0.241	0.505	0.952	0.694	173
5	0.259	-0.516	0.013	0.278	0.517	0.934	0.763	426
6	0.225	-0.480	0.011	0.269	0.490	0.833	0.760	538
7	0.223	-0.654	0.010	0.272	0.474	0.902	0.759	507
8	0.245	-0.323	0.052	0.250	0.442	0.830	0.787	277
9	0.263	-0.211	0.065	0.283	0.532	0.722	0.784	51
Low Score (1-2)	0.073	-1.696	-0.290	0.236	0.517	1.212	0.633	30
High Score (8-9)	0.248	-0.306	0.054	0.256	0.456	0.813	0.787	328
High-Low	0.175	1.390	0.343	0.020	-0.060	-0.399		358
High-All	0.018	0.195	0.047	-0.009	-0.036	-0.090		
High-Index	0.060	0.332	0.100	0.031	-0.011	-0.082		

Resampling Result	Mean	5%	25%	Median	75%	95%
FSCORE						
Pseudo Low Mean	0.228	-0.462	0.009	0.262	0.480	0.834
Pseudo Low	31	0	6	364	662	965
(p-Value)	0.031	0.000	0.006	0.364	0.662	0.965
Pseudo High Mean	0.229	-0.518	0.006	0.263	0.490	0.900
Pseudo High	174	2	36	644	943	909
(p-Value)	0.174	0.002	0.036	0.644	0.943	0.909
Pseudo High-Low Mean	0.000	-0.056	-0.003	0.001	0.011	0.066
Pseudo High-Low	22	0	3	401	811	981
(p-Value)	0.022	0.000	0.003	0.401	0.811	0.981
Pseudo High-All Mean	-0.001	-0.017	0.000	-0.002	-0.002	-0.003
Pseudo High-All	174	2	36	644	943	909
(p-Value)	0.174	0.002	0.036	0.644	0.943	0.909
Pseudo High-Index Mean	0.168	-0.850	-0.094	0.231	0.502	0.982
Pseudo High-Index	1000	0	0	1000	1000	1000
(p-Value)	1.000	0.000	0.000	1.000	1.000	1.000

Table 24d: FSCORE Middle Book-to-Market Firms

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.034	-0.594	-0.150	0.053	0.240	0.638	0.571	2,052
FSCORE								
0	-	-	-	-	-	-	-	0
1	-0.027	-1.071	-0.415	0.044	0.325	0.958	0.667	6
2	-0.290	-2.236	-0.479	-0.184	0.094	0.757	0.375	24
3	-0.074	-0.886	-0.356	-0.006	0.221	0.597	0.500	50
4	-0.022	-0.780	-0.197	-0.004	0.234	0.588	0.497	173
5	0.035	-0.550	-0.182	0.055	0.240	0.678	0.552	426
6	0.038	-0.538	-0.134	0.056	0.241	0.574	0.595	538
7	0.048	-0.628	-0.152	0.057	0.245	0.679	0.584	507
8	0.067	-0.409	-0.109	0.054	0.225	0.676	0.588	277
9	0.111	-0.427	-0.086	0.141	0.271	0.587	0.647	51
Low Score (1-2)	-0.237	-2.003	-0.467	-0.138	0.140	0.797	0.433	30
High Score (8-9)	0.074	-0.412	-0.105	0.067	0.232	0.662	0.598	328
High-Low	0.311	1.591	0.361	0.205	0.092	-0.136		358
High-All	0.040	0.182	0.045	0.014	-0.008	0.024		
High-Index	0.063	0.287	0.083	0.033	-0.007	0.007		

Resampling Result	Mean	5%	25%	Median	75%	95%
FSCORE						
Pseudo Low Mean	0.035	-0.548	-0.149	0.049	0.240	0.587
Pseudo Low	0	0	2	6	73	884
(p-Value)	0.000	0.000	0.002	0.006	0.073	0.884
Pseudo High Mean	0.034	-0.593	-0.151	0.053	0.239	0.631
Pseudo High	26	0	18	218	633	341
(p-Value)	0.026	0.000	0.018	0.218	0.633	0.341
Pseudo High-Low Mean	-0.001	-0.046	-0.001	0.004	-0.001	0.044
Pseudo High-Low	0	0	0	1	105	845
(p-Value)	0.000	0.000	0.000	0.001	0.105	0.845
Pseudo High-All Mean	0.000	0.001	-0.001	0.000	-0.001	-0.007
Pseudo High-All	26	0	18	218	633	341
(p-Value)	0.026	0.000	0.018	0.218	0.633	0.341
Pseudo High-Index Mean	-0.029	-0.881	-0.233	0.020	0.246	0.624
Pseudo High-Index	0	0	0	224	1000	1000
(p-Value)	0.000	0.000	0.000	0.224	1.000	1.000

5.3.2. Middle BM: FSCORE

Of the 2,052 observations six firm years achieve a FSCORE of one, and 24 a FSCORE of two, totalling 30/2,052 or 1.46% of the segment. Firms scoring one or two are considered low FSCORE firms and shorted five months after fiscal year end for 12 or 24 months. The average low FSCORE firm earns its investors -1.7% (one-year return), -18.2% (one-year market adjusted return), 7.3% (two-year return) and -23.7% (two-year market adjusted return), average return rates in the period 2002-2013. The empirical low FSCORE portfolios significantly outperform pseudo low portfolios created through random selection for all rates of return.

Of the 2,052 observations 277 achieve a FSCORE of eight and 51 accomplish nine, totalling 328/2,052 or 16.0% of the segment. Firms scoring eight or nine are considered high FSCORE firms and longed five months after fiscal year end for 12 or 24 months. High FSCORE firms create an average return of 15.5% (one-year market return), 5.8% (one-year market adjusted return), 24.8% (two-year market return) and 7.4% (two-year market adjusted return). The high FSCORE portfolio means outperform the pseudo high FSCORE portfolios means for one-year market adjusted and two-year market adjusted returns.

The significant performance from the low FSCORE portfolios when paired with the high FSCORE portfolios is enough to significantly outperform the resample. In figures the high-low strategy earns its investor 24.0% (one-year market return), 17.2% (one-year market adjusted return), 17.5% (two-year market return) and 31.1% (two-year market adjusted return). Evaluating the pseudo high-low portfolios there is significant evidence that the empirical portfolio is able to outperform randomly selected firms.

The pseudo high-all portfolios evaluate whether high FSCORE firms are able to perform better than the middle book-to-market segment. Displaying significant excess returns the empirical high-all portfolios deliver 1.9% (one-year market return), 3.0% (one-year market adjusted return), 1.8% (two-year market return) and 4.0% (two-year market adjusted return) excess returns. For the one-year and two-year market returns, the excess returns of 1.9% and 1.8% are considered insignificant.

Last, the pseudo high portfolios less the index averages are examined. Similar to the pseudo high-all portfolios the pseudo high-index portfolios rules alike. For one-year and two-year market adjusted return means the empirical portfolios are able to outperform the high-index

pseudo portfolios. The high-index strategy earns its investor an average excess return of 6.6% (one-year return), 5.5% (one-year market adjusted return), 6.0% (two-year return) and 6.3% (two-year market adjusted return), one- and two-year market returns being insignificant.

The FSCORE variable is, in the majority of the cases, able to select winners and losers using a buy-and-hold strategy longing high scoring firms and shorting low. The following tables examines the EESG variables and their ability to separate winners from losers.

Table 25a: ECNSCORE Middle Book-to-Market Firms

One-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.136	-0.414	-0.019	0.155	0.308	0.626	0.728	2,052
ECNSCORE								
0-10	0.051	-0.863	-0.150	0.127	0.308	0.669	0.623	77
11-20	0.106	-0.699	-0.128	0.181	0.342	0.645	0.660	150
21-30	0.128	-0.453	-0.070	0.138	0.333	0.719	0.677	164
31-40	0.123	-0.389	-0.033	0.148	0.303	0.570	0.725	193
41-50	0.167	-0.350	0.024	0.162	0.311	0.665	0.764	216
51-60	0.160	-0.422	-0.003	0.197	0.334	0.701	0.745	220
61-70	0.174	-0.267	0.025	0.176	0.325	0.631	0.780	254
71-80	0.121	-0.406	-0.026	0.131	0.281	0.522	0.710	241
81-90	0.133	-0.359	-0.004	0.139	0.297	0.490	0.742	279
91-100	0.127	-0.296	-0.009	0.139	0.279	0.571	0.740	258
Low Score (0-20)	0.087	-0.755	-0.136	0.162	0.330	0.653	0.648	227
High Score (81-100)	0.130	-0.329	-0.006	0.139	0.288	0.529	0.741	537
High-Low	0.043	0.426	0.129	-0.023	-0.042	-0.124		764
High-All	-0.006	0.085	0.012	-0.016	-0.020	-0.097		
High-Index	0.041	0.251	0.072	0.010	-0.008	-0.088		

Resampling Result	Mean	5%	25%	Median	75%	95%		
ECNSCORE								
Pseudo Low Mean	0.137	-0.396	-0.016	0.156	0.309	0.613		
Pseudo Low	9	0	0	641	867	781		
(p-Value)	0.009	0.000	0.000	0.641	0.867	0.781		
Pseudo High Mean	0.136	-0.406	-0.018	0.155	0.307	0.617		
Pseudo High	685	27	258	917	960	995		
(p-Value)	0.685	0.027	0.258	0.917	0.960	0.995		
Pseudo High-Low Mean	-0.001	-0.010	-0.002	-0.001	-0.001	0.004		
Pseudo High-Low	26	0	0	862	963	977		
(p-Value)	0.026	0.000	0.000	0.862	0.963	0.977		
Pseudo High-All Mean	0.000	0.007	0.000	0.000	-0.001	-0.009		
Pseudo High-All	685	27	258	917	960	995		
(p-Value)	0.685	0.027	0.258	0.917	0.960	0.995		
Pseudo High-Index Mean	0.095	-0.657	-0.090	0.145	0.315	0.704		
Pseudo High-Index	1000	0	0	1000	1000	1000		
(p-Value)	1.000	0.000	0.000	1.000	1.000	1.000		

Table 25b: ECNSCORE Middle Book-to-Market Firms

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.028	-0.422	-0.118	0.032	0.173	0.479	0.558	2,052
ECNSCORE								
0-10	-0.069	-0.910	-0.283	-0.024	0.172	0.467	0.468	77
11-20	-0.013	-0.716	-0.183	0.001	0.195	0.536	0.500	150
21-30	0.022	-0.479	-0.128	0.017	0.194	0.507	0.555	164
31-40	0.018	-0.437	-0.122	0.022	0.178	0.404	0.539	193
41-50	0.044	-0.432	-0.116	0.041	0.205	0.517	0.583	216
51-60	0.060	-0.403	-0.098	0.050	0.211	0.542	0.605	220
61-70	0.047	-0.315	-0.093	0.035	0.181	0.428	0.575	254
71-80	0.015	-0.412	-0.119	0.016	0.139	0.432	0.535	241
81-90	0.038	-0.331	-0.090	0.035	0.155	0.434	0.577	279
91-100	0.034	-0.309	-0.097	0.030	0.155	0.445	0.558	258
Low Score (0-20)	-0.032	-0.782	-0.217	-0.008	0.187	0.513	0.489	227
High Score (81-100)	0.036	-0.321	-0.093	0.033	0.155	0.439	0.568	537
High - Low	0.069	0.461	0.124	0.040	-0.033	-0.074		764
High-All	0.008	0.101	0.024	0.001	-0.018	-0.040		
High-Index	0.033	0.190	0.055	0.019	-0.018	-0.042		

Resampling Result	Mean	5%	25%	Median	75%	95%
ECNSCORE						
Pseudo Low Mean	0.028	-0.414	-0.115	0.030	0.174	0.473
Pseudo Low	0	0	0	9	725	798
(p-Value)	0.000	0.000	0.000	0.009	0.725	0.798
Pseudo High Mean	0.028	-0.419	-0.116	0.031	0.175	0.477
Pseudo High	219	0	43	459	939	894
(p-Value)	0.219	0.000	0.043	0.459	0.939	0.894
Pseudo High-Low Mean	0.000	-0.005	-0.001	0.001	0.000	0.004
Pseudo High-Low	0	0	0	19	898	922
(p-Value)	0.000	0.000	0.000	0.019	0.898	0.922
Pseudo High-All Mean	0.000	0.003	0.002	-0.001	0.002	-0.001
Pseudo High-All	219	0	43	459	939	894
(p-Value)	0.219	0.000	0.043	0.459	0.939	0.894
Pseudo High-Index Mean	-0.004	-0.610	-0.171	0.012	0.192	0.520
Pseudo High-Index	0	0	0	188	1000	1000
(p-Value)	0.000	0.000	0.000	0.188	1.000	1.000

Table 25c: ECNSCORE Middle Book-to-Market Firms

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.230	-0.501	0.006	0.265	0.492	0.903	0.754	2,052
ECNSCORE								
0-10	0.054	-0.970	-0.369	0.143	0.476	1.012	0.597	77
11-20	0.171	-0.776	-0.113	0.223	0.538	1.025	0.667	150
21-30	0.235	-0.474	-0.037	0.280	0.524	1.031	0.726	164
31-40	0.262	-0.567	0.037	0.306	0.513	0.967	0.767	193
41-50	0.275	-0.449	0.052	0.311	0.538	0.914	0.782	216
51-60	0.219	-0.576	0.000	0.268	0.509	0.932	0.750	220
61-70	0.268	-0.398	0.010	0.316	0.514	0.862	0.764	254
71-80	0.206	-0.519	0.007	0.211	0.435	0.795	0.755	241
81-90	0.260	-0.270	0.058	0.286	0.484	0.828	0.806	279
91-100	0.216	-0.296	0.032	0.231	0.422	0.678	0.775	258
Low Score (0-20)	0.132	-0.841	-0.200	0.196	0.517	1.020	0.643	227
High Score (81-100)	0.239	-0.283	0.045	0.259	0.454	0.756	0.791	537
High-Low	0.107	0.559	0.246	0.063	-0.063	-0.264		764
High-All	0.009	0.219	0.039	-0.005	-0.038	-0.147		
High-Index	0.051	0.355	0.092	0.035	-0.013	-0.139		

Resampling Result	Mean	5%	25%	Median	75%	95%
ECNSCORE						
Pseudo Low Mean	0.229	-0.517	0.007	0.263	0.490	0.897
Pseudo Low	0	3	0	5	840	958
(p-Value)	0.000	0.003	0.000	0.005	0.840	0.958
Pseudo High Mean	0.230	-0.514	0.008	0.263	0.491	0.905
Pseudo High	313	0	35	580	982	1000
(p-Value)	0.313	0.000	0.035	0.580	0.982	1.000
Pseudo High-Low Mean	0.001	0.003	0.001	0.001	0.001	0.008
Pseudo High-Low	2	0	0	24	968	1000
(p-Value)	0.002	0.000	0.000	0.024	0.968	1.000
Pseudo High-All Mean	0.000	-0.013	0.002	-0.001	-0.001	0.003
Pseudo High-All	313	0	35	580	982	1000
(p-Value)	0.313	0.000	0.035	0.580	0.982	1.000
Pseudo High-Index Mean	0.179	-0.869	-0.083	0.228	0.505	1.045
Pseudo High-Index	1000	0	0	1000	1000	1000
(p-Value)	1.000	0.000	0.000	1.000	1.000	1.000

Table 25d: ECNSCORE Middle Book-to-Market Firms

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.034	-0.594	-0.150	0.053	0.240	0.638	0.571	2,052
ECNSCORE								
0-10	-0.154	-1.125	-0.507	-0.047	0.231	0.840	0.468	77
11-20	-0.036	-0.987	-0.229	0.015	0.214	0.723	0.520	150
21-30	0.022	-0.713	-0.168	0.060	0.255	0.860	0.579	164
31-40	0.068	-0.534	-0.103	0.068	0.252	0.684	0.596	193
41-50	0.059	-0.571	-0.171	0.072	0.281	0.698	0.593	216
51-60	0.048	-0.558	-0.161	0.064	0.289	0.733	0.577	220
61-70	0.059	-0.485	-0.130	0.078	0.252	0.562	0.579	254
71-80	0.012	-0.546	-0.151	0.012	0.224	0.566	0.527	241
81-90	0.070	-0.435	-0.119	0.067	0.233	0.570	0.599	279
91-100	0.037	-0.409	-0.129	0.053	0.181	0.540	0.585	258
Low Score (0-20)	-0.076	-1.034	-0.323	-0.006	0.220	0.763	0.502	227
High Score (81-100)	0.054	-0.423	-0.124	0.060	0.208	0.556	0.592	537
High-Low	0.130	0.611	0.200	0.066	-0.011	-0.207		764
High-All	0.020	0.171	0.026	0.007	-0.032	-0.082		
High-Index	0.043	0.277	0.064	0.026	-0.031	-0.099		

Resampling Result	Mean	5%	25%	Median	75%	95%		
ECNSCORE								
Pseudo Low Mean	0.033	-0.599	-0.152	0.051	0.239	0.628		
Pseudo Low	0	0	0	2	175	953		
(p-Value)	0.000	0.000	0.000	0.002	0.175	0.953		
Pseudo High Mean	0.034	-0.596	-0.151	0.053	0.240	0.635		
Pseudo High	80	0	49	263	992	976		
(p-Value)	0.080	0.000	0.049	0.263	0.992	0.976		
Pseudo High-Low Mean	0.002	0.002	0.001	0.002	0.001	0.007		
Pseudo High-Low	0	0	0	5	706	997		
(p-Value)	0.000	0.000	0.000	0.005	0.706	0.997		
Pseudo High-All Mean	0.000	-0.002	-0.001	0.000	0.000	-0.003		
Pseudo High-All	80	0	49	263	992	976		
(p-Value)	0.080	0.000	0.049	0.263	0.992	0.976		
Pseudo High-Index Mean	-0.009	-0.873	-0.215	0.027	0.271	0.734		
Pseudo High-Index	0	0	0	519	1000	1000		
(p-Value)	0.000	0.000	0.000	0.519	1.000	1.000		

5.3.3. Middle BM: EESG Economic

Firms scoring between 0-20 are considered low ECNSCORE firms and shorted five months after fiscal year end for 12 or 24 months. The average low ECNSCORE firm earns its investors 8.7% (one-year return), -3.2% (one-year market adjusted return), 13.2% (two-year return) and -7.6% (two-year market adjusted return), average return rates in the period 2002-2013. Of the 2,052 observations 77 firm years achieve a ECNSCORE between 0-10, and 150 a score between 11-20, totalling 227/2,052 or 11.1% of the index. The low ECNSCORE portfolio is able to deliver significant lower returns in regards to means across all rates of return. However, the variable is unable to deliver negative returns required to successfully implement the short end of the strategy.

Of the 2,052 observations 279 achieve an ECNSCORE between 81-90 and 258 accomplish a score from 91-100, totalling 537/2,052 or 26.2% of the segment. Firms scoring between 81-90 or from 91-100 are considered high ECNSCORE firms and longed five months after fiscal year end for 12 or 24 months. High ECNSCORE firms create an average return of 13.0% (one-year market return), 3.6% (one-year market adjusted return), 23.9% (two-year market return) and 5.4% (two-year market adjusted return). The high ECNSCORE portfolio means fails to outperform the pseudo high ECNSCORE portfolios means for all rates of return.

The significant performance from the low ECNSCORE portfolios is able to significantly outperform the random selection. In figures the high-low strategy earns its investor 4.3% (one-year market return), 6.9% (one-year market adjusted return), 10.7% (two-year market return) and 13.0% (two-year market adjusted return). Evaluating the pseudo high-low portfolios there is significant evidence that the empirical portfolio is able to outperform randomly selected firms.

The pseudo high-all portfolio averages are examined to determine whether the empirical portfolios are able to outperform the middle book-to-market segment. The high-all strategy earns its investor an average excess return of -0.6% (one-year return), 0.8% (one-year market adjusted return), 0.9% (two-year return) and 2.0% (two-year market adjusted return) of which all are insignificant.

The pseudo high-index portfolios evaluate whether high ECNSCORE firms are able to perform better than the LA4CTYUS index. Displaying significant excess returns the empirical high-

index portfolios deliver 4.1% (one-year market return), 3.3% (one-year market adjusted return), 5.1% (two-year market return) and 4.3% (two-year market adjusted return) excess returns. For the one-year and two-year market returns, the excess returns of 4.1% and 5.1% are considered insignificant.

The ECNSCORE variable is, in the majority of the cases, unable to select winners from losers by using a buy-and-hold strategy shorting low scoring firms and longing high scoring firms. As few groups show negative returns across return rates, shorting a stock is unadvised in the case that the stock increases in value.

Table 26a: ENVSCORE Middle Book-to-Market Firms

One-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.136	-0.414	-0.019	0.155	0.308	0.626	0.728	2,052
ENVSCORE								
0-10	0.106	-0.315	-0.020	0.136	0.289	0.456	0.716	74
11-20	0.117	-0.488	-0.077	0.141	0.321	0.656	0.673	608
21-30	0.152	-0.351	-0.004	0.171	0.307	0.692	0.736	212
31-40	0.162	-0.322	0.016	0.200	0.316	0.588	0.777	139
41-50	0.161	-0.398	0.022	0.173	0.320	0.583	0.766	107
51-60	0.185	-0.349	0.027	0.202	0.381	0.653	0.771	105
61-70	0.159	-0.382	0.026	0.178	0.339	0.570	0.768	112
71-80	0.170	-0.292	0.037	0.208	0.325	0.597	0.788	156
81-90	0.143	-0.332	0.000	0.151	0.278	0.606	0.749	247
91-100	0.100	-0.427	-0.033	0.124	0.261	0.520	0.723	292
Low Score (0-20)	0.116	-0.469	-0.071	0.141	0.318	0.634	0.677	682
High Score (81-100)	0.120	-0.384	-0.018	0.136	0.269	0.559	0.735	539
High-Low	0.004	0.086	0.053	-0.004	-0.049	-0.075		1,221
High-All	-0.016	0.030	0.001	-0.019	-0.039	-0.067		
High-Index	0.031	0.196	0.060	0.008	-0.027	-0.057		

Resampling Result	Mean	5%	25%	Median	75%	95%		
ENVSCORE								
Pseudo Low Mean	0.136	-0.409	-0.018	0.155	0.308	0.619		
Pseudo Low	13	19	0	60	854	651		
(p-Value)	0.013	0.019	0.000	0.060	0.854	0.651		
Pseudo High Mean	0.136	-0.408	-0.017	0.155	0.308	0.618		
Pseudo High	926	265	503	955	999	950		
(p-Value)	0.926	0.265	0.503	0.955	0.999	0.950		
Pseudo High-Low Mean	0.000	0.001	0.001	0.000	0.000	-0.001		
Pseudo High-Low	401	49	1	628	999	948		
(p-Value)	0.401	0.049	0.001	0.628	0.999	0.948		
Pseudo High-All Mean	0.000	0.006	0.001	0.000	0.000	-0.008		
Pseudo High-All	926	265	503	955	999	950		
(p-Value)	0.926	0.265	0.503	0.955	0.999	0.950		
High-Index	0.106	-0.604	-0.078	0.147	0.335	0.675		
Pseudo High-Index Mean	1000	0	0	1000	1000	1000		
Pseudo High-Index	1.000	0.000	0.000	1.000	1.000	1.000		

Table 26b: ENVSCORE Middle Book-to-Market Firms

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.028	-0.422	-0.118	0.032	0.173	0.479	0.558	2,052
ENVSCORE								
0-10	-0.013	-0.433	-0.138	0.008	0.157	0.309	0.514	74
11-20	0.027	-0.499	-0.123	0.033	0.196	0.540	0.541	608
21-30	0.050	-0.389	-0.106	0.048	0.207	0.533	0.599	212
31-40	0.033	-0.449	-0.118	0.034	0.186	0.416	0.612	139
41-50	0.038	-0.303	-0.125	0.036	0.171	0.396	0.570	107
51-60	0.041	-0.403	-0.108	0.041	0.171	0.474	0.619	105
61-70	0.013	-0.464	-0.119	0.017	0.142	0.389	0.518	112
71-80	0.051	-0.346	-0.099	0.055	0.181	0.497	0.609	156
81-90	0.035	-0.315	-0.111	0.042	0.162	0.464	0.551	247
91-100	0.002	-0.364	-0.118	0.012	0.115	0.372	0.517	292
Low Score (0-20)	0.023	-0.492	-0.124	0.030	0.192	0.515	0.538	682
High Score (81-100)	0.017	-0.342	-0.114	0.026	0.137	0.414	0.532	539
High-Low	-0.006	0.150	0.010	-0.004	-0.055	-0.101		1,221
High-All	-0.011	0.080	0.003	-0.006	-0.036	-0.065		
High-Index	0.013	0.169	0.033	0.012	-0.036	-0.067		

Resampling Result	Mean	5%	25%	Median	75%	95%
ENVSCORE						
Pseudo Low Mean	0.028	-0.419	-0.116	0.031	0.174	0.479
Pseudo Low	257	1	163	441	952	950
(p-Value)	0.257	0.001	0.163	0.441	0.952	0.950
Pseudo High Mean	0.028	-0.418	-0.116	0.031	0.173	0.479
Pseudo High	854	4	401	760	999	985
(p-Value)	0.854	0.004	0.401	0.760	0.999	0.985
Pseudo High-Low Mean	0.000	0.001	0.000	0.000	-0.001	0.000
Pseudo High-Low	654	0	237	645	1000	1000
(p-Value)	0.654	0.000	0.237	0.645	1.000	1.000
Pseudo High-All Mean	0.000	0.004	0.001	-0.001	0.001	0.000
Pseudo High-All	854	4	401	760	999	985
(p-Value)	0.854	0.004	0.401	0.760	0.999	0.985
High-Index	0.014	-0.588	-0.150	0.019	0.209	0.546
Pseudo High-Index Mean	532	0	0	792	1000	1000
Pseudo High-Index	0.532	0.000	0.000	0.792	1.000	1.000

Table 26c: ENVSCORE Middle Book-to-Market Firms

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.230	-0.501	0.006	0.265	0.492	0.903	0.754	2,052
ENVSCORE								
0-10	0.239	-0.325	0.040	0.326	0.523	0.692	0.824	74
11-20	0.204	-0.612	-0.069	0.230	0.510	0.989	0.696	608
21-30	0.235	-0.573	0.000	0.255	0.517	1.007	0.750	212
31-40	0.272	-0.704	0.123	0.303	0.526	0.950	0.813	139
41-50	0.235	-0.434	0.007	0.306	0.481	0.917	0.757	107
51-60	0.322	-0.594	0.124	0.384	0.557	1.048	0.829	105
61-70	0.231	-0.477	0.000	0.317	0.487	0.777	0.741	112
71-80	0.273	-0.398	0.085	0.322	0.518	0.903	0.808	156
81-90	0.237	-0.362	0.025	0.244	0.451	0.777	0.761	247
91-100	0.195	-0.345	0.037	0.205	0.397	0.690	0.777	292
Low Score (0-20)	0.208	-0.581	-0.057	0.241	0.511	0.957	0.710	682
High Score (81-100)	0.214	-0.353	0.032	0.223	0.422	0.730	0.770	539
High-Low	0.006	0.228	0.089	-0.018	-0.089	-0.227		1,221
High-All	-0.016	0.148	0.025	-0.042	-0.070	-0.173		
High-Index	0.026	0.284	0.078	-0.001	-0.045	-0.165		

Resampling Result	Mean	5%	25%	Median	75%	95%		
ENVSCORE								
Pseudo Low Mean	0.230	-0.517	0.007	0.264	0.492	0.907		
Pseudo Low	49	97	0	54	912	906		
(p-Value)	0.049	0.097	0.000	0.054	0.912	0.906		
Pseudo High Mean	0.230	-0.515	0.008	0.264	0.492	0.904		
Pseudo High	828	0	131	993	1000	1000		
(p-Value)	0.828	0.000	0.131	0.993	1.000	1.000		
Pseudo High-Low Mean	0.000	0.001	0.000	0.000	-0.001	-0.003		
Pseudo High-Low	389	3	0	788	1000	1000		
(p-Value)	0.389	0.003	0.000	0.788	1.000	1.000		
Pseudo High-All Mean	0.000	-0.014	0.001	-0.001	-0.001	0.002		
Pseudo High-All	828	0	131	993	1000	1000		
(p-Value)	0.828	0.000	0.131	0.993	1.000	1.000		
Pseudo High-Index Mean	0.204	-0.800	-0.070	0.265	0.537	1.070		
Pseudo High-Index	1000	0	0	1000	1000	1000		
(p-Value)	1.000	0.000	0.000	1.000	1.000	1.000		

Table 26d: ENVSCORE Middle Book-to-Market Firms

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.034	-0.594	-0.150	0.053	0.240	0.638	0.571	2,052
ENVSCORE								
0-10	-0.028	-0.530	-0.156	0.039	0.197	0.387	0.541	74
11-20	0.034	-0.722	-0.196	0.069	0.280	0.748	0.582	608
21-30	0.041	-0.727	-0.167	0.073	0.290	0.753	0.590	212
31-40	0.060	-0.538	-0.118	0.064	0.246	0.606	0.597	139
41-50	0.035	-0.486	-0.180	0.049	0.248	0.561	0.589	107
51-60	0.085	-0.546	-0.080	0.073	0.308	0.701	0.600	105
61-70	-0.005	-0.488	-0.189	0.036	0.201	0.569	0.571	112
71-80	0.065	-0.440	-0.113	0.070	0.254	0.645	0.558	156
81-90	0.045	-0.481	-0.123	0.033	0.221	0.633	0.555	247
91-100	0.002	-0.475	-0.133	0.016	0.173	0.483	0.531	292
Low Score (0-20)	0.027	-0.701	-0.191	0.066	0.271	0.709	0.578	682
High Score (81-100)	0.021	-0.478	-0.129	0.024	0.195	0.551	0.542	539
High-Low	-0.006	0.224	0.063	-0.042	-0.076	-0.158		1,221
High-All	-0.012	0.116	0.021	-0.029	-0.045	-0.087		
High-Index	0.010	0.222	0.059	-0.010	-0.044	-0.104		

Resampling Result ENVSCORE	Mean	5%	25%	Median	75%	95%		
Pseudo Low Mean	0.033	-0.596	-0.152	0.052	0.240	0.636		
Pseudo Low	324	38	11	889	986	952		
(p-Value)	0.324	0.038	0.011	0.889	0.986	0.952		
Pseudo High Mean	0.034	-0.596	-0.151	0.053	0.240	0.636		
Pseudo High	808	6	78	981	1000	987		
(p-Value)	0.808	0.006	0.078	0.981	1.000	0.987		
Pseudo High-Low Mean	0.001	0.000	0.001	0.001	0.000	0.001		
Pseudo High-Low	639	0	3	994	1000	998		
(p-Value)	0.639	0.000	0.003	0.994	1.000	0.998		
Pseudo High-All Mean	0.001	-0.002	-0.001	0.000	0.000	-0.002		
Pseudo High-All	808	6	78	981	1000	987		
(p-Value)	0.808	0.006	0.078	0.981	1.000	0.987		
Pseudo High-Index Mean	0.024	-0.818	-0.210	0.063	0.284	0.740		
Pseudo High-Index	820	0	0	1000	1000	1000		
(p-Value)	0.820	0.000	0.000	1.000	1.000	1.000		

5.3.4. Middle BM: EESG Environmental

The average low ENVSCORE firm earns its investors 11.6% (one-year return), 2.3% (one-year market adjusted return), 20.8 (two-year return) and 2.7% (two-year market adjusted return), average return rates in the period 2002-2013. Of the 2,052 observations 74 firm years achieve an ENVSCORE between 0-10, and 608 a score between 11-20, totalling 682/2,052 or 33.2% of the index. Low ENVSCORE firms display below average positive returns significantly lower than the middle book-to-market average for one- and two-year market returns. In regards to one- and two-year market adjusted returns the empirical portfolios deliver below average, but insignificant returns.

High ENVSCORE firms create an average return of 12.0% (one-year market return), 1.7% (one-year market adjusted return), 21.4% (two-year market return) and 2.1% (two-year market adjusted return). The high ENVSCORE portfolios fails to outperform the pseudo portfolios in all instances deeming it unfit to select winners.

Due to the results from both the low- and high-score portfolios the high-low strategy fails to deliver above average returns. In figures the high-low strategy earns its investor 0.4% (one-year return), -0.6% (one-year market adjusted return), 0.6% (two-year return) and -0.6% (two-year market adjusted return). Evaluating the pseudo high-low portfolios there is no evidence that the empirical portfolio is able to outperform randomly selected firms.

The high-all strategy earns its investor an average return of -1.6% (one-year return), -1.1% (one-year market adjusted return), -1.6% (two-year return) and -1.2% (two-year market adjusted return) deeming the high ENVSCORE portfolios unable to select winners. Although leaving investors with positive returns, the high-index strategy earns 3.1% (one-year return), 1.3% (one-year market adjusted return), 2.6% (two-year return) and 1.0% (two-year market adjusted return) insignificantly higher than the index.

The ENVSCORE variable is, in the majority of the cases, unable to select winners from losers by using a buy-and-hold strategy shorting low scoring firms and longing high scoring firms. As few groups show negative returns, shorting a stock is unadvised in the case that the stock increases in value. The 51-60 range produces high returns with an average return of 18.5% (one-year return), 4.1% (one-year market adjusted return), 32.2% (two-year return), and 8.5% (two-year market adjusted return) with a modest sample size of 105. Investors are advised to

take long positions in ENVSCORE stocks in the range of 51-60 when available. Investors are further advised against taking short positions based on ENVSCORE as few sub group is able to display significant negative returns.

Table 27a: CGVSCORE Middle Book-to-Market Firms

One-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.136	-0.414	-0.019	0.155	0.308	0.626	0.728	2,052
CGVSCORE								
0-10	0.032	-0.668	0.039	0.229	0.273	0.424	0.800	5
11-20	0.189	-0.309	0.023	0.246	0.412	0.576	0.750	16
21-30	0.131	-0.380	-0.096	0.097	0.259	0.777	0.600	15
31-40	0.085	-0.449	-0.197	0.142	0.317	0.649	0.621	29
41-50	0.223	-0.354	0.045	0.262	0.444	0.764	0.754	65
51-60	0.105	-0.557	-0.072	0.116	0.303	0.706	0.660	147
61-70	0.152	-0.497	0.028	0.182	0.334	0.656	0.756	316
71-80	0.145	-0.334	-0.024	0.156	0.320	0.612	0.718	522
81-90	0.123	-0.349	-0.009	0.138	0.280	0.559	0.735	597
91-100	0.133	-0.415	-0.004	0.150	0.290	0.613	0.741	340
Low Score (0-20)	0.152	-0.394	0.026	0.242	0.379	0.540	0.762	21
High Score (81-100)	0.126	-0.373	-0.007	0.142	0.284	0.579	0.737	937
High-Low	-0.025	0.021	-0.034	-0.100	-0.095	0.039		958
High-All	-0.010	0.040	0.011	-0.013	-0.024	-0.047		
High-Index	0.037	0.206	0.071	0.013	-0.012	-0.038		

Resampling Result	Mean	5%	25%	Median	75%	95%		
CGVSCORE								
Pseudo Low Mean	0.137	-0.322	-0.011	0.154	0.302	0.554		
Pseudo Low	582	331	638	911	847	542		
(p-Value)	0.582	0.331	0.638	0.911	0.847	0.542		
Pseudo High Mean	0.136	-0.410	-0.018	0.155	0.308	0.621		
Pseudo High	886	94	197	955	1000	963		
(p-Value)	0.886	0.094	0.197	0.955	1.000	0.963		
Pseudo High-Low Mean	-0.001	-0.088	-0.007	0.001	0.006	0.067		
Pseudo High-Low	622	262	585	944	905	622		
(p-Value)	0.622	0.262	0.585	0.944	0.905	0.622		
Pseudo High-All Mean	0.000	0.003	0.000	0.000	0.000	-0.005		
Pseudo High-All	886	94	197	955	1000	963		
(p-Value)	0.886	0.094	0.197	0.955	1.000	0.963		
High-Index	0.099	-0.617	-0.089	0.142	0.320	0.659		
Pseudo High-Index Mean	1000	0	0	1000	1000	1000		
Pseudo High-Index	1.000	0.000	0.000	1.000	1.000	1.000		

Table 27b: CGVSCORE Middle Book-to-Market Firms

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.028	-0.422	-0.118	0.032	0.173	0.479	0.558	2,052
CGVSCORE								
0-10	-0.110	-0.749	-0.109	0.017	0.177	0.254	0.600	5
11-20	0.139	-0.164	-0.067	0.121	0.245	0.556	0.688	16
21-30	0.041	-0.346	-0.220	-0.116	0.156	0.790	0.333	15
31-40	0.033	-0.318	-0.175	-0.004	0.147	0.608	0.448	29
41-50	0.081	-0.439	-0.092	0.100	0.297	0.609	0.585	65
51-60	0.001	-0.587	-0.152	0.012	0.162	0.585	0.517	147
61-70	0.028	-0.499	-0.107	0.053	0.185	0.472	0.592	316
71-80	0.036	-0.412	-0.109	0.037	0.176	0.493	0.584	522
81-90	0.014	-0.398	-0.120	0.014	0.150	0.405	0.524	597
91-100	0.038	-0.343	-0.085	0.037	0.175	0.434	0.571	340
Low Score (0-20)	0.080	-0.303	-0.077	0.097	0.229	0.484	0.667	21
High Score (81-100)	0.023	-0.378	-0.108	0.022	0.159	0.415	0.541	937
High-Low	-0.057	-0.075	-0.031	-0.074	-0.070	-0.069		958
High-All	-0.005	0.044	0.010	-0.010	-0.014	-0.064		
High-Index	0.019	0.133	0.040	0.008	-0.013	-0.066		

Resampling Result	Mean	5%	25%	Median	75%	95%		
CGVSCORE								
Pseudo Low Mean	0.028	-0.360	-0.111	0.030	0.168	0.411		
Pseudo Low	820	622	657	877	815	722		
(p-Value)	0.820	0.622	0.657	0.877	0.815	0.722		
Pseudo High Mean	0.028	-0.421	-0.116	0.031	0.174	0.480		
Pseudo High	769	6	121	931	960	998		
(p-Value)	0.769	0.006	0.121	0.931	0.960	0.998		
Pseudo High-Low Mean	0.000	-0.060	-0.006	0.002	0.006	0.069		
Pseudo High-Low	835	503	602	919	870	834		
(p-Value)	0.835	0.503	0.602	0.919	0.870	0.834		
Pseudo High-All Mean	0.000	0.001	0.001	-0.001	0.001	0.001		
Pseudo High-All	769	6	121	931	960	998		
(p-Value)	0.769	0.006	0.121	0.931	0.960	0.998		
High-Index	0.009	-0.554	-0.157	0.023	0.187	0.545		
Pseudo High-Index Mean	82	0	0	993	1000	1000		
Pseudo High-Index	0.082	0.000	0.000	0.993	1.000	1.000		

Table 27c: CGVSCORE Middle Book-to-Market Firms

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.230	-0.501	0.006	0.265	0.492	0.903	0.754	2,052
CGVSCORE								
0-10	0.315	-0.567	0.388	0.482	0.691	0.793	0.800	5
11-20	0.485	-0.002	0.187	0.560	0.621	1.050	0.938	16
21-30	0.241	-0.410	-0.067	0.175	0.404	0.956	0.667	15
31-40	0.337	-0.206	-0.108	0.327	0.631	1.142	0.586	29
41-50	0.255	-0.672	0.012	0.373	0.562	1.006	0.754	65
51-60	0.169	-0.762	-0.140	0.257	0.507	0.951	0.728	147
61-70	0.239	-0.530	-0.024	0.314	0.500	0.907	0.731	316
71-80	0.238	-0.480	0.010	0.250	0.507	0.931	0.759	522
81-90	0.219	-0.485	0.009	0.237	0.464	0.850	0.757	597
91-100	0.227	-0.357	0.038	0.253	0.449	0.757	0.785	340
Low Score (0-20)	0.444	-0.136	0.235	0.542	0.637	0.989	0.905	21
High Score (81-100)	0.222	-0.439	0.019	0.243	0.458	0.816	0.767	937
High-Low	-0.222	-0.303	-0.216	-0.299	-0.179	-0.173		958
High-All	-0.008	0.062	0.013	-0.021	-0.034	-0.086		
High-Index	0.034	0.198	0.066	0.019	-0.009	-0.079		

Resampling Result	Mean	5%	25%	Median	75%	95%		
CGVSCORE								
Pseudo Low Mean	0.237	-0.417	0.023	0.268	0.479	0.822		
Pseudo Low	988	871	965	997	952	815		
(p-Value)	0.988	0.871	0.965	0.997	0.952	0.815		
Pseudo High Mean	0.231	-0.512	0.007	0.264	0.493	0.910		
Pseudo High	783	6	177	972	1000	997		
(p-Value)	0.783	0.006	0.177	0.972	1.000	0.997		
Pseudo High-Low Mean	-0.006	-0.096	-0.016	-0.004	0.014	0.088		
Pseudo High-Low	990	771	956	999	973	891		
(p-Value)	0.990	0.771	0.956	0.999	0.973	0.891		
Pseudo High-All Mean	0.001	-0.011	0.001	-0.001	0.000	0.007		
Pseudo High-All	783	6	177	972	1000	997		
(p-Value)	0.783	0.006	0.177	0.972	1.000	0.997		
Pseudo High-Index Mean	0.197	-0.711	-0.058	0.245	0.502	0.989		
Pseudo High-Index	1000	0	0	1000	1000	1000		
(p-Value)	1.000	0.000	0.000	1.000	1.000	1.000		

Table 27d: CGVSCORE Middle Book-to-Market Firms

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.034	-0.594	-0.150	0.053	0.240	0.638	0.571	2,052
CGVSCORE								
0-10	0.067	-0.756	0.223	0.237	0.387	0.470	0.800	5
11-20	0.289	-0.093	0.085	0.261	0.368	1.006	0.813	16
21-30	0.019	-0.699	-0.350	-0.078	0.248	0.807	0.467	15
31-40	0.142	-0.386	-0.150	-0.006	0.311	1.141	0.483	29
41-50	0.009	-0.924	-0.183	0.100	0.322	0.779	0.600	65
51-60	-0.035	-0.907	-0.256	0.042	0.263	0.701	0.551	147
61-70	0.044	-0.695	-0.116	0.079	0.268	0.624	0.608	316
71-80	0.041	-0.557	-0.164	0.063	0.248	0.661	0.567	522
81-90	0.029	-0.529	-0.147	0.035	0.219	0.625	0.551	597
91-100	0.034	-0.479	-0.120	0.039	0.192	0.568	0.576	340
Low Score (0-20)	0.236	-0.251	0.118	0.255	0.372	0.878	0.810	21
High Score (81-100)	0.031	-0.510	-0.137	0.036	0.209	0.605	0.560	937
High-Low	-0.205	-0.260	-0.255	-0.219	-0.164	-0.274		958
High-All	-0.003	0.084	0.013	-0.017	-0.031	-0.033		
High-Index	0.020	0.189	0.051	0.002	-0.030	-0.050		

Resampling Result	Mean	5%	25%	Median	75%	95%		
CGVSCORE								
Pseudo Low Mean	0.037	-0.504	-0.142	0.054	0.237	0.558		
Pseudo Low	989	911	999	994	919	941		
(p-Value)	0.989	0.911	0.999	0.994	0.919	0.941		
Pseudo High Mean	0.033	-0.599	-0.151	0.053	0.239	0.636		
Pseudo High	591	4	80	975	1000	719		
(p-Value)	0.591	0.004	0.080	0.975	1.000	0.719		
Pseudo High-Low Mean	-0.004	-0.095	-0.009	-0.001	0.002	0.078		
Pseudo High-Low	991	770	997	995	950	953		
(p-Value)	0.991	0.770	0.997	0.995	0.950	0.953		
Pseudo High-All Mean	0.000	-0.005	-0.001	0.000	-0.001	-0.002		
Pseudo High-All	591	4	80	975	1000	719		
(p-Value)	0.591	0.004	0.080	0.975	1.000	0.719		
Pseudo High-Index Mean	0.013	-0.788	-0.202	0.050	0.269	0.686		
Pseudo High-Index	246	0	0	1000	1000	1000		
(p-Value)	0.246	0.000	0.000	1.000	1.000	1.000		

5.3.5. Middle BM: EESG Governmental

The average low CGVSCORE firm earns its investors 15.2% (one-year return), 8.0% (one-year market adjusted return), 44.4% (two-year return) and 23.6% (two-year market adjusted return), average return rates in the period 2002-2013. Of the 2,052 observations 5 firm years achieve an ENVSCORE between 0-10, and 16 a score between 11-20, totalling 21/2,052 or 1.0% of the segment. Low CGVSCORE firms do not significantly outperform random selection for any return rate.

High CGVSCORE firms create an average return of 12.6% (one-year market return), 2.3% (one-year market adjusted return), 22.2% (two-year market return) and 3.1% (two-year market adjusted return). With below average segment returns, the high ENVSCORE portfolios fails to outperform the pseudo portfolios in all instances deeming it unfit to select winners.

In figures the high-low strategy earns its investor -2.5% (one-year return), -5.7% (one-year market adjusted return), -22.2% (two-year return) and -20.5% (two-year market adjusted return). Evaluating the pseudo high-low portfolios there is no evidence that the empirical portfolio is able to outperform randomly selected firms.

The high-all strategy earns its investor an average return of -1.0% (one-year return), -0.5% (one-year market adjusted return), -0.8% (two-year return) and -0.3% (two-year market adjusted return) judging high CGVSCORE portfolios unable to select winners. The high-all strategy fails to deliver significant results when compared to the middle book-to-market segment.

Last, the high-index portfolios test whether the high score portfolios are able to outperform the index average. For the CGVSCORE variable the high score portfolios are unable to show significant returns for all rates of return.

The CGVSCORE variable is, in the majority of the cases, unable to select winners from losers by using a buy-and-hold strategy shorting low scoring firms and longing high scoring firms. As few groups show negative returns across return rates, shorting a stock is unadvised in the case that the stock increases in value. The 11-20 range produces the highest returns with an average return of 18.9% (one-year return), 13.9% (one-year market adjusted return), 48.5% (two-year return), and 28.9% (two-year market adjusted return) at the cost of sample size. Investors are

advised to take long positions in CGVSCORE stocks in the range of 11-20 when available. Investors are further advised against taking short positions based on CGVSCORE as few sub groups are able to display significant negative returns.

Table 28a: SOCSCORE Middle Book-to-Market Firms

One-Year Market Returns	Mean	10%	25%	Median	75%	90%	% Positive	n
All Firms	0.136	-0.414	-0.019	0.155	0.308	0.626	0.728	2,052
SOCSCORE								
0-10	0.088	-0.704	-0.147	0.152	0.358	0.692	0.643	112
11-20	0.136	-0.390	-0.037	0.155	0.318	0.618	0.704	274
21-30	0.136	-0.453	-0.019	0.166	0.303	0.630	0.723	282
31-40	0.168	-0.300	-0.009	0.165	0.344	0.644	0.735	200
41-50	0.147	-0.372	0.004	0.180	0.310	0.597	0.748	163
51-60	0.166	-0.298	-0.001	0.182	0.309	0.654	0.749	203
61-70	0.133	-0.448	0.006	0.162	0.314	0.559	0.756	172
71-80	0.139	-0.334	0.002	0.140	0.293	0.638	0.753	194
81-90	0.117	-0.424	-0.005	0.132	0.259	0.528	0.735	238
91-100	0.116	-0.347	-0.031	0.137	0.291	0.530	0.715	214
Low Score (0-20)	0.122	-0.481	-0.069	0.154	0.330	0.640	0.687	386
High Score (81-100)	0.116	-0.388	-0.017	0.134	0.274	0.529	0.726	452
High-Low	-0.006	0.094	0.052	-0.020	-0.056	-0.110		838
High-All	-0.020	0.026	0.001	-0.021	-0.034	-0.097		
High-Index	0.027	0.192	0.061	0.005	-0.022	-0.087		

Resampling Result	Mean	5%	25%	Median	75%	95%		
SOCSCORE								
Pseudo Low Mean	0.136	-0.405	-0.018	0.155	0.308	0.615		
Pseudo Low	178	52	9	451	916	678		
(p-Value)	0.178	0.052	0.009	0.451	0.916	0.678		
Pseudo High Mean	0.136	-0.405	-0.017	0.155	0.308	0.617		
Pseudo High	923	331	490	972	999	994		
(p-Value)	0.923	0.331	0.490	0.972	0.999	0.994		
Pseudo High-Low Mean	0.000	0.000	0.001	0.000	0.000	0.002		
Pseudo High-Low	620	93	34	865	999	977		
(p-Value)	0.620	0.093	0.034	0.865	0.999	0.977		
Pseudo High-All Mean	0.000	0.008	0.001	0.000	0.000	-0.009		
Pseudo High-All	923	331	490	972	999	994		
(p-Value)	0.923	0.331	0.490	0.972	0.999	0.994		
High-Index	0.109	-0.597	-0.078	0.150	0.330	0.704		
Pseudo High-Index Mean	1000	0	0	1000	1000	1000		
Pseudo High-Index	1.000	0.000	0.000	1.000	1.000	1.000		

Table 28b: SOCSCORE Middle Book-to-Market Firms

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.028	-0.422	-0.118	0.032	0.173	0.479	0.558	2,052
SOCSCORE								
0-10	0.017	-0.683	-0.183	0.051	0.246	0.629	0.571	112
11-20	0.040	-0.489	-0.098	0.039	0.194	0.480	0.573	274
21-30	0.013	-0.477	-0.107	0.021	0.169	0.470	0.546	282
31-40	0.053	-0.384	-0.118	0.055	0.217	0.565	0.595	200
41-50	0.032	-0.402	-0.122	0.024	0.160	0.477	0.540	163
51-60	0.051	-0.369	-0.118	0.048	0.183	0.494	0.596	203
61-70	0.012	-0.451	-0.122	0.009	0.170	0.406	0.529	172
71-80	0.029	-0.348	-0.113	0.028	0.150	0.429	0.552	194
81-90	0.017	-0.341	-0.100	0.017	0.138	0.437	0.521	238
91-100	0.016	-0.378	-0.113	0.028	0.157	0.393	0.561	214
Low Score (0-20)	0.033	-0.545	-0.122	0.043	0.209	0.524	0.573	386
High Score (81-100)	0.017	-0.358	-0.106	0.023	0.147	0.416	0.540	452
High-Low	-0.017	0.187	0.017	-0.020	-0.062	-0.107		838
High-All	-0.012	0.064	0.012	-0.009	-0.026	-0.063		
High-Index	0.013	0.153	0.042	0.009	-0.025	-0.065		

Resampling Result	Mean	5%	25%	Median	75%	95%
SOCSCORE						
Pseudo Low Mean	0.029	-0.417	-0.115	0.031	0.174	0.478
Pseudo Low	656	0	332	890	988	883
(p-Value)	0.656	0.000	0.332	0.890	0.988	0.883
Pseudo High Mean	0.028	-0.417	-0.116	0.030	0.174	0.476
Pseudo High	835	17	206	784	983	940
(p-Value)	0.835	0.017	0.206	0.784	0.983	0.940
Pseudo High-Low Mean	0.000	0.000	-0.001	0.000	0.000	-0.002
Pseudo High-Low	813	0	200	915	997	986
(p-Value)	0.813	0.000	0.200	0.915	0.997	0.986
Pseudo High-All Mean	0.000	0.005	0.002	-0.001	0.001	-0.003
Pseudo High-All	835	17	206	784	983	940
(p-Value)	0.835	0.017	0.206	0.784	0.983	0.940
High-Index	0.015	-0.570	-0.158	0.022	0.199	0.541
Pseudo High-Index Mean	582	0	0	889	1000	1000
Pseudo High-Index	0.582	0.000	0.000	0.889	1.000	1.000

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Table 28c: SOCSCORE Middle Book-to-Market Firms

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.230	-0.501	0.006	0.265	0.492	0.903	0.754	2,052
SOCSCORE								
0-10	0.216	-0.742	-0.155	0.295	0.569	1.088	0.679	112
11-20	0.238	-0.539	-0.022	0.246	0.552	1.033	0.719	274
21-30	0.243	-0.583	-0.006	0.306	0.509	0.875	0.745	282
31-40	0.251	-0.582	0.019	0.275	0.545	0.987	0.760	200
41-50	0.242	-0.484	0.012	0.269	0.488	0.932	0.761	163
51-60	0.248	-0.455	0.011	0.315	0.504	0.927	0.759	203
61-70	0.177	-0.476	-0.002	0.255	0.423	0.760	0.744	172
71-80	0.238	-0.376	0.037	0.270	0.467	0.895	0.799	194
81-90	0.222	-0.400	0.037	0.218	0.418	0.767	0.777	238
91-100	0.211	-0.316	0.033	0.249	0.442	0.681	0.780	214
Low Score (0-20)	0.231	-0.598	-0.061	0.260	0.557	1.049	0.707	386
High Score (81-100)	0.217	-0.360	0.035	0.232	0.430	0.726	0.779	452
High-Low	-0.015	0.238	0.095	-0.028	-0.127	-0.322		838
High-All	-0.014	0.141	0.029	-0.032	-0.063	-0.176		
High-Index	0.029	0.277	0.081	0.008	-0.038	-0.169		

Resampling Result	Mean	5%	25%	Median	75%	95%
SOCSCORE						
Pseudo Low Mean	0.231	-0.516	0.007	0.263	0.493	0.903
Pseudo Low	513	139	16	450	999	1000
(p-Value)	0.513	0.139	0.016	0.450	0.999	1.000
Pseudo High Mean	0.230	-0.516	0.007	0.264	0.492	0.906
Pseudo High	784	0	103	967	1000	1000
(p-Value)	0.784	0.000	0.103	0.967	1.000	1.000
Pseudo High-Low Mean	0.000	0.000	0.000	0.000	-0.001	0.003
Pseudo High-Low	693	5	3	849	1000	1000
(p-Value)	0.693	0.005	0.003	0.849	1.000	1.000
Pseudo High-All Mean	0.000	-0.015	0.001	-0.001	0.000	0.003
Pseudo High-All	784	0	103	967	1000	1000
(p-Value)	0.784	0.000	0.103	0.967	1.000	1.000
Pseudo High-Index Mean	0.201	-0.794	-0.074	0.255	0.530	1.075
Pseudo High-Index	1000	0	0	1000	1000	1000
(p-Value)	1.000	0.000	0.000	1.000	1.000	1.000

Table 28d: SOCSCORE Middle Book-to-Market Firms

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.034	-0.594	-0.150	0.053	0.240	0.638	0.571	2,052
SOCSCORE								
0-10	0.061	-0.815	-0.225	0.083	0.346	0.928	0.598	112
11-20	0.040	-0.783	-0.177	0.076	0.266	0.778	0.588	274
21-30	0.019	-0.703	-0.164	0.066	0.226	0.571	0.585	282
31-40	0.053	-0.635	-0.176	0.071	0.292	0.747	0.580	200
41-50	0.045	-0.509	-0.133	0.016	0.230	0.678	0.552	163
51-60	0.052	-0.559	-0.165	0.075	0.284	0.640	0.571	203
61-70	-0.014	-0.528	-0.177	0.043	0.179	0.454	0.541	172
71-80	0.048	-0.408	-0.136	0.056	0.245	0.610	0.593	194
81-90	0.035	-0.473	-0.121	0.024	0.198	0.543	0.534	238
91-100	0.011	-0.431	-0.132	0.038	0.176	0.451	0.565	214
Low Score (0-20)	0.046	-0.792	-0.191	0.078	0.290	0.822	0.591	386
High Score (81-100)	0.024	-0.453	-0.126	0.031	0.188	0.499	0.549	452
High - Low	-0.022	0.339	0.064	-0.047	-0.102	-0.322		838
High-All	-0.010	0.141	0.024	-0.022	-0.052	-0.139		
High-Index	0.013	0.246	0.061	-0.003	-0.051	-0.155		

Resampling Result	Mean	5%	25%	Median	75%	95%
SOCSCORE						
Pseudo Low Mean	0.035	-0.599	-0.150	0.053	0.241	0.639
Pseudo Low	729	2	23	958	989	1000
(p-Value)	0.729	0.002	0.023	0.958	0.989	1.000
Pseudo High Mean	0.034	-0.595	-0.151	0.053	0.240	0.636
Pseudo High	741	1	90	938	999	999
(p-Value)	0.741	0.001	0.090	0.938	0.999	0.999
Pseudo High-Low Mean	-0.001	0.004	-0.001	0.000	-0.001	-0.003
Pseudo High-Low	808	0	7	987	1000	1000
(p-Value)	0.808	0.000	0.007	0.987	1.000	1.000
Pseudo High-All Mean	0.000	-0.001	-0.001	0.000	-0.001	-0.002
Pseudo High-All	741	1	90	938	999	999
(p-Value)	0.741	0.001	0.090	0.938	0.999	0.999
Pseudo High-Index Mean	0.021	-0.841	-0.212	0.056	0.291	0.791
Pseudo High-Index	711	0	0	1000	1000	1000
(p-Value)	0.711	0.000	0.000	1.000	1.000	1.000

5.3.6. Middle BM: EESG Social

The average low SOCSCORE firm earns its investors 12.2% (one-year return), 3.3% (one-year market adjusted return), 23.1% (two-year return) and 4.6% (two-year market adjusted return), average return rates in the period 2002-2013. Of the 2,052 observations 112 firm years achieve an SOCSCORE between 0-10, and 274 a score between 11-20, totalling 386/2,052 or 18.8% of the segment. Providing above segment average returns for all rates of returns except one-year market return, low SOCSCORE firms do not significantly outperform random selection for any return rate.

High SOCSCORE firms create an average return of 11.6% (one-year market return), 1.7% (one-year market adjusted return), 21.7% (two-year market return) and 2.4% (two-year market adjusted return). With below average segment returns, the high ENVSCORE portfolios fails to outperform the pseudo portfolios in all instances judging it unfit to select winners.

In figures the high-low strategy earns its investor -0.6% (one-year return), -1.7% (one-year market adjusted return), -1.5% (two-year return) and -2.2% (two-year market adjusted return). Evaluating the pseudo high-low portfolios there is no evidence that the empirical portfolio is able to outperform randomly selected firms.

The high-all strategy earns its investor an average return of -3.1% (one-year return), -3.2% (one-year market adjusted return), -2.7% (two-year return) and -2.5% (two-year market adjusted return) deeming high CGVSCORE portfolios unable to select winners. The high-index strategy is not able to deliver significant higher returns for any return rates.

The SOCSCORE variable is, in the majority of the cases, unable to select winners from losers by using a buy-and-hold strategy shorting low scoring firms and longing high scoring firms. As few groups show negative returns across return rates, shorting a stock is unadvised in the case that the stock increases in value. The 31-40 range produces high returns with an average return of 16.8% (one-year return), 5.1% (one-year market adjusted return), 24.8% (two-year return), and 5.2% (two-year market adjusted return) with a good sample size of 203. Investors are advised to take long positions in SOCSCORE stocks in the range of 31-40 when available. Investors are further advised against taking short positions based on SOSCORE as no sub group is able to display significant negative returns.

Table 29a: aEESG Middle Book-to-Market Firms

One-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.136	-0.414	-0.019	0.155	0.308	0.626	0.728	2,052
aEESG								
0-10	-0.403	-0.800	-0.623	-0.403	-0.182	-0.005	0.500	2
11-20	0.241	-0.346	0.052	0.183	0.355	1.046	0.750	16
21-30	0.055	-0.624	-0.170	0.115	0.317	0.644	0.601	153
31-40	0.148	-0.453	-0.025	0.163	0.343	0.694	0.719	324
41-50	0.142	-0.330	-0.041	0.158	0.307	0.634	0.693	374
51-60	0.160	-0.309	0.025	0.185	0.297	0.586	0.785	284
61-70	0.159	-0.429	0.031	0.188	0.322	0.630	0.809	236
71-80	0.150	-0.348	-0.005	0.148	0.317	0.608	0.717	226
81-90	0.120	-0.389	0.003	0.141	0.268	0.516	0.755	294
91-100	0.102	-0.297	-0.050	0.105	0.269	0.447	0.692	143
Low Score (0-20)	0.170	-0.396	-0.023	0.118	0.296	0.930	0.722	18
High Score (81-100)	0.114	-0.359	-0.015	0.130	0.269	0.493	0.735	437
High-Low	-0.056	0.037	0.008	0.012	-0.027	-0.436		455
High-All	-0.022	0.054	0.004	-0.025	-0.039	-0.133		
High-Index	0.025	0.220	0.064	0.001	-0.028	-0.123		

Resampling Result	Mean	5%	25%	Median	75%	95%
aEESG						
Pseudo Low Mean	0.135	-0.321	-0.014	0.152	0.302	0.545
Pseudo Low	689	310	417	304	499	987
(p-Value)	0.689	0.310	0.417	0.304	0.499	0.987
Pseudo High Mean	0.137	-0.403	-0.017	0.155	0.308	0.617
Pseudo High	968	189	487	987	1000	1000
(p-Value)	0.968	0.189	0.487	0.987	1.000	1.000
Pseudo High-Low Mean	0.002	-0.082	-0.003	0.004	0.006	0.072
Pseudo High-Low	763	237	420	457	675	998
(p-Value)	0.763	0.237	0.420	0.457	0.675	0.998
Pseudo High-All Mean	0.000	0.011	0.002	0.001	0.000	-0.009
Pseudo High-All	968	189	487	987	1000	1000
(p-Value)	0.968	0.189	0.487	0.987	1.000	1.000
High-Index Mean	0.112	-0.623	-0.081	0.155	0.336	0.740
Pseudo High-Index	1000	0	0	1000	1000	1000
(p-Value)	1.000	0.000	0.000	1.000	1.000	1.000

Table 29b: aEESG Middle Book-to-Market Firms

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.028	-0.422	-0.118	0.032	0.173	0.479	0.558	2,052
aEESG								
0-10	-0.509	-0.869	-0.709	-0.509	-0.309	-0.149	0.000	2
11-20	0.173	-0.320	-0.047	0.067	0.284	0.857	0.625	16
21-30	-0.051	-0.657	-0.248	-0.010	0.177	0.526	0.484	153
31-40	0.045	-0.510	-0.099	0.036	0.205	0.534	0.571	324
41-50	0.030	-0.420	-0.128	0.026	0.199	0.498	0.551	374
51-60	0.048	-0.332	-0.086	0.041	0.172	0.410	0.609	284
61-70	0.043	-0.425	-0.103	0.053	0.179	0.474	0.602	236
71-80	0.034	-0.343	-0.123	0.016	0.170	0.486	0.522	226
81-90	0.018	-0.360	-0.085	0.021	0.133	0.401	0.544	294
91-100	0.010	-0.341	-0.136	0.018	0.139	0.384	0.538	143
Low Score (0-20)	0.097	-0.381	-0.120	0.003	0.218	0.745	0.556	18
High Score (81-100)	0.015	-0.354	-0.101	0.020	0.135	0.395	0.542	437
High-Low	-0.082	0.028	0.019	0.017	-0.083	-0.350		455
High-All	-0.013	0.068	0.016	-0.012	-0.038	-0.084		
High-Index	0.012	0.158	0.046	0.006	-0.037	-0.086		

Resampling Result	Mean	5%	25%	Median	75%	95%		
aEESG								
Pseudo Low Mean	0.029	-0.352	-0.106	0.030	0.168	0.406		
Pseudo Low	864	375	404	309	767	988		
(p-Value)	0.864	0.375	0.404	0.309	0.767	0.988		
Pseudo High Mean	0.028	-0.416	-0.117	0.030	0.173	0.475		
Pseudo High	851	23	117	837	998	992		
(p-Value)	0.851	0.023	0.117	0.837	0.998	0.992		
Pseudo High-Low Mean	-0.001	-0.064	-0.011	0.000	0.006	0.069		
Pseudo High-Low	900	235	304	366	864	994		
(p-Value)	0.900	0.235	0.304	0.366	0.864	0.994		
Pseudo High-All Mean	-0.001	0.006	0.001	-0.002	0.000	-0.004		
Pseudo High-All	851	23	117	837	998	992		
(p-Value)	0.851	0.023	0.117	0.837	0.998	0.992		
High-Index Mean	0.016	-0.574	-0.163	0.024	0.211	0.561		
Pseudo High-Index	619	0	0	962	1000	1000		
(p-Value)	0.619	0.000	0.000	0.962	1.000	1.000		

Table 29c: aEESG Middle Book-to-Market Firms

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.230	-0.501	0.006	0.265	0.492	0.903	0.754	2,052
aEESG								
0-10	0.007	-0.724	-0.399	0.007	0.413	0.738	0.500	2
11-20	0.459	-0.392	0.099	0.346	0.736	1.477	0.813	16
21-30	0.162	-0.739	-0.157	0.169	0.552	0.932	0.621	153
31-40	0.225	-0.608	-0.013	0.283	0.545	1.020	0.735	324
41-50	0.235	-0.641	-0.008	0.277	0.519	0.957	0.738	374
51-60	0.250	-0.453	0.049	0.279	0.503	0.889	0.792	284
61-70	0.257	-0.441	0.023	0.297	0.506	0.856	0.775	236
71-80	0.234	-0.388	0.032	0.236	0.474	0.892	0.779	226
81-90	0.230	-0.294	0.036	0.237	0.430	0.735	0.776	294
91-100	0.193	-0.311	0.039	0.212	0.403	0.636	0.790	143
Low Score (0-20)	0.408	-0.429	0.044	0.308	0.700	1.395	0.778	18
High Score (81-100)	0.217	-0.299	0.037	0.229	0.421	0.702	0.780	437
High-Low	-0.191	0.129	-0.007	-0.079	-0.279	-0.693		455
High-All	-0.013	0.202	0.031	-0.036	-0.071	-0.200		
High-Index	0.030	0.338	0.083	0.005	-0.046	-0.193		

Resampling Result	Mean	5%	25%	Median	75%	95%		
aEESG								
Pseudo Low Mean	0.229	-0.424	0.017	0.263	0.475	0.799		
Pseudo Low	957	423	552	672	988	989		
(p-Value)	0.957	0.423	0.552	0.672	0.988	0.989		
Pseudo High Mean	0.230	-0.518	0.008	0.264	0.492	0.904		
Pseudo High	751	0	98	974	1000	1000		
(p-Value)	0.751	0.000	0.098	0.974	1.000	1.000		
Pseudo High-Low Mean	0.001	-0.095	-0.009	0.001	0.017	0.106		
Pseudo High-Low	963	185	461	793	995	997		
(p-Value)	0.963	0.185	0.461	0.793	0.995	0.997		
Pseudo High-All Mean	0.000	-0.017	0.002	-0.001	-0.001	0.002		
Pseudo High-All	751	0	98	974	1000	1000		
(p-Value)	0.751	0.000	0.098	0.974	1.000	1.000		
Pseudo High-Index Mean	0.200	-0.856	-0.075	0.259	0.538	1.097		
Pseudo High-Index	1000	0	0	1000	1000	1000		
(p-Value)	1.000	0.000	0.000	1.000	1.000	1.000		

Table 29d: aEESG Middle Book-to-Market Firms

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.034	-0.594	-0.150	0.053	0.240	0.638	0.571	2,052
aEESG								
0-10	-0.255	-0.926	-0.628	-0.255	0.118	0.416	0.500	2
11-20	0.265	-0.700	-0.083	0.181	0.445	1.390	0.625	16
21-30	-0.044	-0.947	-0.301	0.019	0.244	0.702	0.516	153
31-40	0.029	-0.726	-0.172	0.062	0.257	0.805	0.586	324
41-50	0.035	-0.595	-0.156	0.070	0.302	0.701	0.586	374
51-60	0.056	-0.549	-0.128	0.063	0.252	0.612	0.581	284
61-70	0.061	-0.481	-0.143	0.076	0.275	0.596	0.606	236
71-80	0.042	-0.467	-0.150	0.048	0.224	0.595	0.549	226
81-90	0.032	-0.442	-0.122	0.016	0.197	0.541	0.524	294
91-100	0.005	-0.425	-0.124	0.039	0.167	0.361	0.601	143
Low Score (0-20)	0.207	-0.725	-0.144	0.132	0.409	1.282	0.611	18
High Score (81-100)	0.023	-0.437	-0.122	0.024	0.187	0.482	0.549	437
High-Low	-0.184	0.288	0.021	-0.109	-0.221	-0.800		455
High-All	-0.011	0.157	0.028	-0.029	-0.053	-0.156		
High-Index	0.012	0.263	0.065	-0.010	-0.052	-0.173		

Resampling Result	Mean	5%	25%	Median	75%	95%		
aEESG								
Pseudo Low Mean	0.038	-0.511	-0.141	0.053	0.237	0.553		
Pseudo Low	971	164	456	835	953	999		
(p-Value)	0.971	0.164	0.456	0.835	0.953	0.999		
Pseudo High Mean	0.033	-0.597	-0.151	0.053	0.239	0.632		
Pseudo High	743	1	65	967	1000	1000		
(p-Value)	0.743	0.001	0.065	0.967	1.000	1.000		
Pseudo High-Low Mean	-0.005	-0.086	-0.010	0.000	0.002	0.079		
Pseudo High-Low	980	60	352	907	982	1000		
(p-Value)	0.980	0.060	0.352	0.907	0.982	1.000		
Pseudo High-All Mean	0.000	-0.003	-0.001	0.000	-0.001	-0.006		
Pseudo High-All	743	1	65	967	1000	1000		
(p-Value)	0.743	0.001	0.065	0.967	1.000	1.000		
Pseudo High-Index Mean	0.021	-0.860	-0.216	0.063	0.291	0.804		
Pseudo High-Index	719	0	0	1000	1000	1000		
(p-Value)	0.719	0.000	0.000	1.000	1.000	1.000		

Table 30a: aESG Middle Book-to-Market Firms

One-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.136	-0.414	-0.019	0.155	0.308	0.626	0.728	2,052
aESG								
0-10	-0.403	-0.800	-0.623	-0.403	-0.182	-0.005	0.500	2
11-20	0.105	-0.466	-0.129	0.172	0.355	0.491	0.654	26
21-30	0.152	-0.437	-0.092	0.164	0.368	0.730	0.669	133
31-40	0.122	-0.486	-0.056	0.156	0.328	0.640	0.693	414
41-50	0.147	-0.311	-0.008	0.144	0.305	0.598	0.733	329
51-60	0.161	-0.309	0.022	0.198	0.301	0.619	0.773	233
61-70	0.130	-0.409	-0.003	0.161	0.310	0.566	0.739	218
71-80	0.163	-0.345	0.019	0.172	0.306	0.719	0.773	211
81-90	0.127	-0.367	-0.003	0.132	0.289	0.586	0.740	311
91-100	0.107	-0.390	-0.022	0.136	0.269	0.469	0.714	175
Low Score (0-20)	0.069	-0.490	-0.164	0.131	0.317	0.456	0.643	28
High Score (81-100)	0.120	-0.375	-0.010	0.133	0.282	0.544	0.730	486
High-Low	0.051	0.115	0.154	0.002	-0.035	0.088		514
High-All	-0.017	0.038	0.008	-0.022	-0.026	-0.082		
High-Index	0.030	0.204	0.068	0.005	-0.015	-0.073		

Resampling Result	Mean	5%	25%	Median	75%	95%
aESG						
Pseudo Low Mean	0.139	-0.344	-0.011	0.155	0.306	0.578
Pseudo Low	134	186	33	326	603	188
(p-Value)	0.134	0.186	0.033	0.326	0.603	0.188
Pseudo High Mean	0.136	-0.405	-0.018	0.155	0.308	0.617
Pseudo High	910	265	382	979	979	993
(p-Value)	0.910	0.265	0.382	0.979	0.979	0.993
Pseudo High-Low Mean	-0.003	-0.061	-0.007	0.000	0.002	0.039
Pseudo High-Low	189	163	26	447	735	403
(p-Value)	0.189	0.163	0.026	0.447	0.735	0.403
Pseudo High-All Mean	0.000	0.008	0.001	0.000	0.000	-0.009
Pseudo High-All	910	265	382	979	979	993
(p-Value)	0.910	0.265	0.382	0.979	0.979	0.993
High-Index Mean	0.106	-0.610	-0.086	0.150	0.322	0.690
Pseudo High-Index	1000	0	0	1000	1000	1000
(p-Value)	1.000	0.000	0.000	1.000	1.000	1.000

Table 30b: aESG Middle Book-to-Market Firms

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.028	-0.422	-0.118	0.032	0.173	0.479	0.558	2,052
aESG								
0-10	-0.509	-0.869	-0.709	-0.509	-0.309	-0.149	0.000	2
11-20	0.065	-0.302	-0.137	0.055	0.205	0.522	0.615	26
21-30	0.023	-0.469	-0.154	0.032	0.209	0.572	0.534	133
31-40	0.027	-0.553	-0.130	0.037	0.204	0.537	0.556	414
41-50	0.040	-0.361	-0.096	0.033	0.181	0.482	0.559	329
51-60	0.043	-0.425	-0.062	0.040	0.172	0.460	0.618	233
61-70	0.012	-0.439	-0.125	0.037	0.160	0.375	0.560	218
71-80	0.034	-0.325	-0.110	0.022	0.162	0.508	0.545	211
81-90	0.029	-0.369	-0.111	0.029	0.151	0.456	0.556	311
91-100	0.006	-0.347	-0.117	0.013	0.144	0.371	0.514	175
Low Score (0-20)	0.024	-0.342	-0.178	0.014	0.169	0.474	0.571	28
High Score (81-100)	0.021	-0.361	-0.113	0.023	0.148	0.425	0.541	486
High-Low	-0.004	-0.019	0.065	0.009	-0.020	-0.049		514
High-All	-0.008	0.061	0.005	-0.009	-0.025	-0.054		
High-Index	0.017	0.150	0.035	0.010	-0.024	-0.056		

Resampling Result	Mean	5%	25%	Median	75%	95%
aESG						
Pseudo Low Mean	0.028	-0.374	-0.110	0.030	0.171	0.428
Pseudo Low	473	573	108	370	524	659
(p-Value)	0.473	0.573	0.108	0.370	0.524	0.659
Pseudo High Mean	0.028	-0.419	-0.116	0.030	0.174	0.477
Pseudo High	751	20	365	758	985	931
(p-Value)	0.751	0.020	0.365	0.758	0.985	0.931
Pseudo High-Low Mean	0.000	-0.045	-0.006	0.001	0.003	0.049
Pseudo High-Low	537	386	110	434	677	802
(p-Value)	0.537	0.386	0.110	0.434	0.677	0.802
Pseudo High-All Mean	0.000	0.003	0.001	-0.002	0.001	-0.002
Pseudo High-All	751	20	365	758	985	931
(p-Value)	0.751	0.020	0.365	0.758	0.985	0.931
High-Index Mean	0.011	-0.569	-0.151	0.021	0.198	0.533
Pseudo High-Index	298	0	0	881	1000	1000
(p-Value)	0.298	0.000	0.000	0.881	1.000	1.000

Table 30c: aESG Middle Book-to-Market Firms

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.230	-0.501	0.006	0.265	0.492	0.903	0.754	2,052
aESG								
0-10	0.007	-0.724	-0.399	0.007	0.413	0.738	0.500	2
11-20	0.302	-0.316	0.045	0.391	0.563	0.675	0.808	26
21-30	0.264	-0.687	-0.108	0.325	0.595	1.093	0.699	133
31-40	0.211	-0.627	-0.065	0.249	0.527	0.952	0.700	414
41-50	0.239	-0.528	0.018	0.259	0.507	0.931	0.769	329
51-60	0.234	-0.662	0.048	0.294	0.482	0.967	0.781	233
61-70	0.212	-0.615	0.000	0.284	0.478	0.778	0.748	218
71-80	0.268	-0.384	0.053	0.272	0.500	0.978	0.777	211
81-90	0.229	-0.298	0.037	0.234	0.446	0.775	0.781	311
91-100	0.198	-0.286	0.038	0.205	0.401	0.677	0.789	175
Low Score (0-20)	0.281	-0.345	0.013	0.363	0.552	0.680	0.786	28
High Score (81-100)	0.218	-0.294	0.037	0.224	0.429	0.739	0.784	486
High - Low	-0.063	0.051	0.024	-0.140	-0.123	0.060		514
High-All	-0.013	0.208	0.031	-0.041	-0.063	-0.163		
High-Index	0.030	0.344	0.084	-0.001	-0.038	-0.156		

Resampling Result	Mean	5%	25%	Median	75%	95%		
aESG								
Pseudo Low Mean	0.224	-0.472	0.005	0.260	0.480	0.828		
Pseudo Low	739	656	510	909	796	219		
(p-Value)	0.739	0.656	0.510	0.909	0.796	0.219		
Pseudo High Mean	0.230	-0.517	0.007	0.264	0.491	0.903		
Pseudo High	759	0	86	986	1000	1000		
(p-Value)	0.759	0.000	0.086	0.986	1.000	1.000		
Pseudo High-Low Mean	0.006	-0.044	0.002	0.004	0.011	0.075		
Pseudo High-Low	774	292	393	960	939	560		
(p-Value)	0.774	0.292	0.393	0.960	0.939	0.560		
Pseudo High-All Mean	0.000	-0.016	0.001	-0.001	-0.001	0.000		
Pseudo High-All	759	0	86	986	1000	1000		
(p-Value)	0.759	0.000	0.086	0.986	1.000	1.000		
Pseudo High-Index Mean	0.200	-0.860	-0.076	0.264	0.530	1.059		
Pseudo High-Index	1000	0	0	1000	1000	1000		
(p-Value)	1.000	0.000	0.000	1.000	1.000	1.000		

Table 30d: aESG Middle Book-to-Market Firms

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.034	-0.594	-0.150	0.053	0.240	0.638	0.571	2,052
aESG								
0-10	-0.255	-0.926	-0.628	-0.255	0.118	0.416	0.500	2
11-20	0.106	-0.643	-0.063	0.104	0.287	0.518	0.654	26
21-30	0.034	-0.929	-0.236	0.056	0.293	0.848	0.586	133
31-40	0.025	-0.672	-0.217	0.070	0.284	0.783	0.577	414
41-50	0.048	-0.528	-0.128	0.064	0.234	0.690	0.565	329
51-60	0.035	-0.736	-0.167	0.062	0.260	0.677	0.609	233
61-70	0.020	-0.548	-0.147	0.057	0.231	0.566	0.587	218
71-80	0.047	-0.481	-0.163	0.033	0.229	0.705	0.536	211
81-90	0.046	-0.376	-0.121	0.042	0.204	0.542	0.563	311
91-100	-0.003	-0.449	-0.133	0.016	0.170	0.438	0.526	175
Low Score (0-20)	0.081	-0.663	-0.103	0.079	0.275	0.511	0.643	28
High Score (81-100)	0.028	-0.402	-0.126	0.033	0.192	0.505	0.549	486
High-Low	-0.053	0.261	-0.022	-0.046	-0.084	-0.006		514
High-All	-0.006	0.192	0.024	-0.020	-0.049	-0.133		
High-Index	0.017	0.297	0.062	-0.001	-0.047	-0.150		

Resampling Result	Mean	5%	25%	Median	75%	95%		
aESG								
Pseudo Low Mean	0.036	-0.540	-0.141	0.053	0.235	0.581		
Pseudo Low	717	247	663	667	731	358		
(p-Value)	0.717	0.247	0.663	0.667	0.731	0.358		
Pseudo High Mean	0.033	-0.601	-0.152	0.052	0.240	0.635		
Pseudo High	642	0	64	913	997	999		
(p-Value)	0.642	0.000	0.064	0.913	0.997	0.999		
Pseudo High-Low Mean	-0.003	-0.061	-0.011	-0.001	0.005	0.054		
Pseudo High-Low	729	80	536	753	876	643		
(p-Value)	0.729	0.080	0.536	0.753	0.876	0.643		
Pseudo High-All Mean	-0.001	-0.007	-0.002	-0.001	0.000	-0.003		
Pseudo High-All	642	0	64	913	997	999		
(p-Value)	0.642	0.000	0.064	0.913	0.997	0.999		
Pseudo High-Index Mean	0.016	-0.898	-0.215	0.054	0.288	0.786		
Pseudo High-Index	484	0	0	1000	1000	1000		
(p-Value)	0.484	0.000	0.000	1.000	1.000	1.000		

5.3.7. Middle BM: Average EESG and Average ESG

Of the 2,052 observations from 2002-2013 two firm years achieve an EESG between 0-10 and 16 a score between 11-20, totalling 18/2,052 or 0.9% of the index. ESG observations include two firms achieving 0-10 and 26 companies scoring in the range 11-20, totalling 28/2,052 or 1.4% of the index. The average low EESG firm earns its investors 17.0% (one-year return), 9.7% (one-year market adjusted return), 40.8% (two-year return) and 20.7% (two-year market adjusted return), average return rates in the period 2002-2013. Low ESG firms achieves a return of 6.9% (one-year return), 2.4% (one-year market adjusted return), 28.1% (two-year return) and 8.1% (two-year market adjusted return). Displaying above average returns, none of the empirical portfolios are able to significantly outperform random selection.

EESG score firms in the range of 81-90 total 294 and firms scoring between 91-100 143, totalling 437, or 21.3% of the segment. In the regards to ESG firms the number of companies in the range between 81-90 are 311 and firms scoring 91-100 175, totalling 486 or 23.7% of the index. High EESG firms create an average return of 11.4% (one-year market return), 1.5% (one-year market adjusted return), 21.7% (two-year market return) and 2.3% (two-year market adjusted return), while high ESG firms deliver an average return of 12.0% (one-year market return), 2.1% (one-year market adjusted return), 21.8% (two-year market return) and 2.8% (two-year market adjusted return).

Due to the empirical low EESG and ESG portfolios showing higher returns than high EESG and ESG firms, shorting low EESG and ESG firms and longing high EESG and ESG firms can be devastating to an investor. This is reflected in pseudo portfolios where, in regards to means the empirical portfolios are beaten by random selection in over 50 of the 1,000 cases resulting in the rejection of the null hypothesis. The rejection of the null is true for the pseudo low, pseudo high, pseudo high-low, pseudo high-all and pseudo high-index portfolio means.

Last, in regards to the segment a summary including main results, winners and losers is presented for one-year market returns and one-year market adjusted returns.

Table 31: Summary: Middle Book-to-Market FSCORE, EESG, Winners and Losers

	One-Year Market Return				One-Year Market Adjusted Return		
Rank	Variable	Mean Return	n	Rank	Variable	Mean Return	n
1	Low BM	0.179	2,141	1	Low BM	0.061	2,141
2	Middle BM	0.136	2,052	2	Middle BM	0.028	2,052
3	Index	0.089	6,264	3	Index	0.004	6,264

Low Score

Rank	Variable	Mean Return	n	Rank	Variable	Mean Return	n
1	FSCORE	-0.017*	30	1	FSCORE	-0.182*	30
2	aESG	0.069	28	2	ECNSCORE	-0.032*	227
3	ECNSCORE	0.087*	227	3	ENVSCORE	0.023	682
4	ENVSCORE	0.116*	682	4	aESG	0.024	28
5	SOCSCORE	0.122	386	5	SOCSCORE	0.033	386
6	CGVSCORE	0.152	21	6	CGVSCORE	0.080	21
7	aEESG	0.170	18	6	aEESG	0.097	18

High Score

Rank	Variable	Mean Return	n	Rank	Variable	Mean Return	n
1	FSCORE	0.155	328	1	FSCORE	0.058*	328
2	ECNSCORE	0.130	537	2	ECNSCORE	0.036	537
3	CGVSCORE	0.126	937	3	CGVSCORE	0.023	937
4	ENVSCORE	0.120	539	4	aESG	0.021	486
4	aESG	0.120	486	5	ENVSCORE	0.017	539
6	SOCSCORE	0.116	452	5	SOCSCORE	0.017	452
7	aEESG	0.114	437	7	aEESG	0.015	437

Losers

Rank	Variable	Mean Return	n	Rank	Variable	Mean Return	n
1	aEESG (0-10)	-0.403	2	1	aEESG (0-10)	-0.509	2
1	aESG (0-10)	-0.403	2	1	aESG (0-10)	-0.509	2
3	FSCORE (1)	-0.051	6	3	FSCORE (1)	-0.194	6
4	FSCORE (2)	-0.009	24	4	FSCORE (2)	-0.179	24
5	CGVSCORE (0-10)	0.032	5	5	CGVSCORE (0-10)	-0.110	5
6	ECNSCORE (0-10)	0.051	77	6	ECNSCORE (0-10)	-0.069	77
7	aEESG (21-30)	0.055	153	7	aEESG (21-30)	-0.051	153

Winners

Rank	Variable	Mean Return	n	Rank	Variable	Mean Return	n
1	aEESG (11-20)	0.241	16	1	aEESG (11-20)	0.173	16
2	CGVSCORE (41-50)	0.223	65	2	CGVSCORE (11-20)	0.139	16
3	CGVSCORE (11-20)	0.189	16	3	CGVSCORE (41-50)	0.081	65
4	ENVSCORE (51-60)	0.185	105	4	FSCORE (9)	0.077	51
5	ECNSCORE (61-70)	0.174	254	5	aESG (11-20)	0.065	26
6	ENVSCORE (71-80)	0.170	156	6	ECNSCORE (51-60)	0.060	220
7	FSCORE (9)	0.169	51	7	FSCORE (7)	0.057	507

* Significant result from resampling.

5.3.8. Summary: Middle Book-to-Market Firms

The middle bm segment ranks second with an average one-year market return of 13.6% and one-year market adjusted return of 2.8% behind low bm (17.9% 1YRRET, 6.1% 1YRMADJ) and ahead of the index average returns of 8.9% and 0.4% respectively.

Significant low score variables are FSCORE, ECNSCORE and ENVSCORE for one-year market returns and FSCORE and ECNSCORE for one-year market adjusted returns. The FSCORE variable is single variable which displays significant negative returns for both one-year market returns and one-year market adjusted returns. When it comes to high score variables the high FSCORE is able to deliver significant positive returns for one-year market adjusted returns. In regards to one-year market returns the FSCORE variable produces insignificant, higher than average returns.

The aEESG and aESG variables have picked up two observations with a great shorting potential of -40.3% and 50.9% for one-year market and one-year market adjusted returns. However, limited to two observations out of 2,052 from 2002-2013 investors are advised to short the 0-10 range of aEESG and aESG from the middle bm segment stocks when available. Ranking third and fourth low FSCORE firms are well represented in the middle bm segment. In regards to the winners ranking aEESG in the range 11-20 top both the market and market adjusted returns with returns of 24.1% and 17.3% respectively. With rather low sample count investors should look further down the list to distribute risk as well as decrease the chance of stock shortage. CGVSCORE firms in the range 41-50 show an average return of 22.3% (one-year market return) and 8.1% (one-year market adjusted return) while the 11-20 range yield 18.9% and 13.9% respectively. The economic variable ranks within the top seven for the 61-70 range and 51-60 range with 17.4% and 6.0% in respect to one-year market and market adjusted returns. FSCORE nine firms also make the list providing above average returns for both rates of return.

Limited by a small sample sizes investors are advised to short low FSCORE and long aEESG 11-20, CGVSCORE 41-50 and 11-20 and FSCORE 9 firms when available from the LA4CTYUS index. Last, the high book-to-market segment is assessed.

5.4. Empirical Results: High Book-to-Market Firms

Table 32: Financial Characteristics: High (Percentile 66-100) Book-to-Market Firms (2,071 Firm Year Observations between 2002-2013)

	Mean	Median	Standard Deviation	Proportion with Positive Signal
MVE	11041.698	4488.758	20513.301	1.000
TA	18807.108	8936.370	29832.886	1.000
Book-to-Market-ratio	0.835	0.723	0.547	1.000
F1 ROA	0.031	0.036	0.079	0.835
F2 CFO	0.075	0.074	0.084	0.915
F3 cROA	-0.010	-0.002	0.097	0.447
F4 ACC	0.044	0.038	0.028	1.000
F5 cLEV	0.000	-0.003	0.073	0.415
F6 cLIQ	-0.010	0.006	0.781	0.509
F7 EQ	6.473	0.407	94.587	0.586
F8 cMAR	-0.686	-0.133	10.094	0.471
F9 cTURN	-0.031	-0.003	0.314	0.477
ECNSCORE	51.886	51.710	27.902	1.000
ENVSCORE	45.501	37.860	30.692	1.000
CGVSCORE	74.026	78.120	17.289	1.000
SOCSCORE	47.619	45.250	28.023	1.000
Average EESG	54.758	52.175	21.155	1.000
Average ESG	55.715	52.863	22.077	1.000

Table 33: Spearman's rho Correlations: High Book-to-Market Firms (Percentile 66-100) (2,071 Firm Years between 2002-2013)

	F1 ROA	F2 CFO	F3 cROA	F4 ACC	F5 cLEV	F6 cLIQ	F7 EQ	F8 cMAR	F9 cTURN	FSCORE
1YR RET	.159**	.192**	.191**		.131**	.000	-.098**	.170**	.070**	.213**
2YR RET	.097**	.131**	.115**		.087**	.022	-.092**	.126**	.033	.132**
1YRMADJ	.162**	.166**	.171**		.130**	.019	-.057**	.148**	.063**	.210**
2YRMADJ	.098**	.099**	.115**		.061**	.031	-.045*	.098**	.054*	.136**
F1 ROA	1.000	.689**	.200**		.109**	.040	.066**	.122**	.077**	.509**
F2 CFO		1.000	.181**		.089**	.018	.039	.109**	.081**	.434**
F3 cROA			1.000		.038	.033	-.071**	.269**	.350**	.626**
F4 ACC										
F5 cLEV					1.000	-.103**	.000	.059**	-.108**	.313**
F6 cLIQ						1.000	-.026	.020	-.033	.301**
F7 EQ							1.000	-.037	-.040	.275**
F8 cMAR								1.000	.027	.489**
F9 cTURN									1.000	.426**
FSCORE										1.000
ECNSCORE										
ENVSCORE										
CGVSCORE										
SOCSCORE										
Average EESG										
Average ESG										
**. Correlation is significant at the 0.01 level (2-tailed).										
*. Correlation is significant at the 0.05 level (2-tailed).										

Table 33 - continued						
Spearman's rho Correlations: High Book-to-Market Firms (Percentile 66-100) (2,071 Firm Years between 2002-2013)						
	ECNSCORE	ENVSCORE	CGVSCORE	SOCSCORE	Average EESG	Average ESG
1YR RET	.091**	.047*	-.009	.017	.046*	.020
2YR RET	.048*	.058**	.004	.020	.035	.026
1YRMADJ	.078**	.021	-.002	-.005	.026	-.001
2YRMADJ	.034	.044*	.019	.011	.027	.020
F1 ROA	.371**	.066**	.062**	.080**	.186**	.079**
F2 CFO	.280**	.059**	.034	.059**	.141**	.061**
F3 cROA	.080**	-.009	-.017	-.023	.012	-.021
F4 ACC						
F5 cLEV	.042	-.065**	-.050*	-.030	-.027	-.054*
F6 cLIQ	.018	-.003	-.026	-.024	-.015	-.024
F7 EQ	.103**	.028	.007	.088**	.080**	.055*
F8 cMAR	.042	.010	.011	-.024	.009	-.010
F9 cTURN	.031	.001	-.005	-.003	.008	-.003
FSCORE	.217**	.013	-.004	.023	.082**	.010
ECNSCORE	1.000	.459**	.363**	.562**	.752**	.537**
ENVSCORE		1.000	.593**	.751**	.861**	.905**
CGVSCORE			1.000	.548**	.703**	.757**
SOCSCORE				1.000	.890**	.904**
Average EESG					1.000	.956**
Average ESG						1.000
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

5.4.1. High BM: Spearman's rho Correlations

The FSCORE variable performs a low to moderate, positive correlation of 0.213 and 0.210 with one-year and one-year market adjusted returns respectively ranking first. Second, F3 cROA with significant positive correlations of 0.192 and 0.171 with 1YR RET and 1YRMADJ respectively. Third, F2 CFO slightly behind, also with significant positive correlations of 0.192 and 0.166. Fourth, F8 cMAR, followed by F1 ROA and F9 cTURN in respect to positive significant correlations. F7 EQ shows significant negative correlations of -0.098 and -0.057 with 1YR RET and 1YRMADJ. Last, F6 cLIQ displays very low and insignificant positive correlations of 0.000 and 0.019.

Assessing the EESG variables the ECNSCORE variable shows significant low positive correlations with one-year market returns and one-year market adjusted returns. ENVSCORE displays significant positive correlation with 1YR RET, as well as insignificantly positive correlation to 1YRMADJ. CGVSCORE shows very low insignificant negative correlation with 1YR RET and 1YRMADJ, while SOCSCORE shows low insignificant positive correlation with 1YR RET and insignificant negative correlation with 1YRMADJ. Average EESG is significantly positive in regards to 1YR RET and insignificantly positive with 1YRMADJ. The average ESG shows an insignificant positive correlation towards 1YR RET and a close to zero, insignificant negative correlation with 1YRMADJ.

With a strong FSCORE correlation to market and market-adjusted returns the FSCORE and EESG variables are further examined.

Table 34a: FSCORE High Book-to-Market Firms

One-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	-0.050	-0.836	-0.256	0.023	0.220	0.513	0.530	2,071
FSCORE								
0	-	-	-	-	-	-	-	0
1	-0.544	-1.440	-1.132	-0.287	-0.191	0.149	0.167	12
2	-0.543	-1.753	-0.936	-0.594	0.022	0.695	0.271	48
3	-0.235	-1.253	-0.602	-0.197	0.122	0.704	0.333	126
4	-0.152	-0.992	-0.386	-0.065	0.123	0.456	0.434	256
5	-0.049	-0.760	-0.274	0.021	0.215	0.483	0.533	482
6	-0.015	-0.719	-0.176	0.039	0.229	0.453	0.552	511
7	0.047	-0.556	-0.126	0.071	0.263	0.561	0.594	406
8	0.065	-0.634	-0.154	0.125	0.286	0.541	0.668	193
9	-0.048	-0.760	-0.154	0.046	0.188	0.368	0.568	37
Low Score (1-2)	-0.543	-1.691	-0.975	-0.533	-0.020	0.586	0.250	60
High Score (8-9)	0.047	-0.654	-0.154	0.113	0.270	0.513	0.652	230
High-Low	0.590	1.036	0.821	0.645	0.290	-0.073		290
High-All	0.096	0.182	0.102	0.090	0.050	0.000		
High-Index	-0.042	-0.075	-0.076	-0.016	-0.026	-0.103		

Resampling Result	Mean	5%	25%	Median	75%	95%
FSCORE						
Pseudo Low Mean	-0.049	-0.790	-0.253	0.020	0.213	0.483
Pseudo Low	0	0	0	0	0	901
(p-Value)	0.000	0.000	0.000	0.000	0.000	0.901
Pseudo High Mean	-0.049	-0.826	-0.256	0.023	0.217	0.505
Pseudo High	1	18	9	1	10	418
(p-Value)	0.001	0.018	0.009	0.001	0.010	0.418
Pseudo High-Low Mean	0.000	-0.037	-0.003	0.003	0.004	0.022
Pseudo High-Low	0	0	0	0	0	855
(p-Value)	0.000	0.000	0.000	0.000	0.000	0.855
Pseudo High-All Mean	0.001	0.009	0.000	0.000	-0.003	-0.008
Pseudo High-All	1	18	9	1	10	418
(p-Value)	0.001	0.018	0.009	0.001	0.010	0.418
Pseudo High-Index Mean	-0.006	-0.752	-0.180	0.039	0.243	0.608
Pseudo High-Index	894	0	7	982	1000	1000
(p-Value)	0.894	0.000	0.007	0.982	1.000	1.000

Table 34b: FSCORE High Book-to-Market Firms

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	-0.080	-0.697	-0.242	-0.046	0.120	0.398	0.432	2,071
FSCORE								
0	-	-	-	-	-	-	-	0
1	-0.587	-1.320	-1.217	-0.393	-0.257	0.047	0.083	12
2	-0.464	-1.413	-0.774	-0.429	-0.138	0.448	0.167	48
3	-0.239	-1.133	-0.500	-0.190	0.035	0.466	0.278	126
4	-0.162	-0.818	-0.339	-0.115	0.036	0.341	0.316	256
5	-0.077	-0.569	-0.243	-0.047	0.100	0.351	0.423	482
6	-0.051	-0.597	-0.205	-0.024	0.141	0.385	0.476	511
7	-0.004	-0.423	-0.165	-0.003	0.164	0.445	0.495	406
8	0.007	-0.401	-0.150	0.035	0.181	0.448	0.544	193
9	-0.055	-0.591	-0.188	-0.027	0.128	0.313	0.432	37
Low Score (1-2)	-0.488	-1.394	-0.863	-0.422	-0.162	0.367	0.150	60
High Score (8-9)	-0.003	-0.431	-0.156	0.025	0.172	0.427	0.526	230
High-Low	0.486	0.963	0.707	0.447	0.334	0.059		290
High-All	0.078	0.266	0.085	0.071	0.052	0.028		
High-Index	-0.006	0.080	-0.008	0.011	0.000	-0.055		

Resampling Result	Mean	5%	25%	Median	75%	95%		
FSCORE								
Pseudo Low Mean	-0.082	-0.665	-0.240	-0.049	0.116	0.378		
Pseudo Low	0	0	0	0	0	546		
(p-Value)	0.000	0.000	0.000	0.000	0.000	0.546		
Pseudo High Mean	-0.081	-0.689	-0.241	-0.047	0.118	0.395		
Pseudo High	0	0	1	0	18	242		
(p-Value)	0.000	0.000	0.001	0.000	0.018	0.242		
Pseudo High-Low Mean	0.000	-0.024	-0.002	0.002	0.002	0.017		
Pseudo High-Low	0	0	0	0	0	370		
(p-Value)	0.000	0.000	0.000	0.000	0.000	0.370		
Pseudo High-All Mean	-0.001	0.008	0.000	-0.002	-0.002	-0.004		
Pseudo High-All	0	0	1	0	18	242		
(p-Value)	0.000	0.000	0.001	0.000	0.018	0.242		
Pseudo High-Index Mean	-0.075	-0.769	-0.233	-0.059	0.118	0.449		
Pseudo High-Index	0	0	0	0	1000	1000		
(p-Value)	0.000	0.000	0.000	0.000	1.000	1.000		

Table 34c: FSCORE High Book-to-Market Firms

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.067	-0.812	-0.193	0.121	0.378	0.794	0.620	2,071
FSCORE								
0	-	-	-	-	-	-	-	0
1	-0.334	-1.405	-0.718	-0.375	-0.003	0.760	0.250	12
2	-0.371	-1.726	-0.798	-0.334	0.150	0.761	0.354	48
3	-0.088	-1.278	-0.357	-0.029	0.335	0.813	0.492	126
4	-0.001	-0.986	-0.233	0.079	0.319	0.696	0.605	256
5	0.067	-0.724	-0.188	0.115	0.350	0.762	0.620	482
6	0.083	-0.812	-0.168	0.156	0.378	0.699	0.638	511
7	0.149	-0.585	-0.114	0.179	0.409	0.851	0.667	406
8	0.185	-0.550	-0.060	0.171	0.455	0.893	0.684	193
9	-0.002	-0.853	-0.268	0.103	0.310	0.704	0.541	37
Low Score (1-2)	-0.364	-1.661	-0.782	-0.342	0.120	0.761	0.333	60
High Score (8-9)	0.155	-0.599	-0.093	0.160	0.432	0.862	0.661	230
High-Low	0.519	1.063	0.689	0.502	0.312	0.101		290
High-All	0.088	0.214	0.100	0.039	0.054	0.068		
High-Index	-0.033	0.039	-0.047	-0.064	-0.036	-0.033		

Resampling Result	Mean	5%	25%	Median	75%	95%		
FSCORE								
Pseudo Low Mean	0.066	-0.779	-0.184	0.122	0.371	0.751		
Pseudo Low	0	2	0	0	0	515		
(p-Value)	0.000	0.002	0.000	0.000	0.000	0.515		
Pseudo High Mean	0.066	-0.815	-0.194	0.122	0.376	0.782		
Pseudo High	2	18	7	120	47	96		
(p-Value)	0.002	0.018	0.007	0.120	0.047	0.096		
Pseudo High-Low Mean	0.000	-0.036	-0.010	0.000	0.005	0.030		
Pseudo High-Low	0	0	0	0	0	320		
(p-Value)	0.000	0.000	0.000	0.000	0.000	0.320		
Pseudo High-All Mean	0.000	-0.002	-0.001	0.001	-0.002	-0.013		
Pseudo High-All	2	18	7	120	47	96		
(p-Value)	0.002	0.018	0.007	0.120	0.047	0.096		
Pseudo High-Index Mean	0.099	-0.853	-0.147	0.186	0.412	0.814		
Pseudo High-Index	1000	0	8	1000	1000	1000		
(p-Value)	1.000	0.000	0.008	1.000	1.000	1.000		

Table 34d: FSCORE High Book-to-Market Firms

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	-0.064	-0.841	-0.274	-0.018	0.193	0.591	0.477	2,071
FSCORE								
0	-	-	-	-	-	-	-	0
1	-0.487	-1.733	-0.844	-0.552	0.221	0.566	0.333	12
2	-0.444	-1.672	-0.927	-0.303	0.057	0.366	0.313	48
3	-0.216	-1.136	-0.458	-0.132	0.143	0.607	0.397	126
4	-0.131	-1.034	-0.335	-0.062	0.142	0.578	0.434	256
5	-0.067	-0.749	-0.247	-0.030	0.151	0.513	0.454	482
6	-0.048	-0.785	-0.244	0.000	0.204	0.535	0.501	511
7	0.015	-0.542	-0.198	0.001	0.237	0.658	0.505	406
8	0.040	-0.523	-0.237	0.038	0.259	0.737	0.554	193
9	-0.068	-0.816	-0.255	0.036	0.203	0.509	0.568	37
Low Score (1-2)	-0.453	-1.684	-0.911	-0.353	0.090	0.406	0.317	60
High Score (8-9)	0.023	-0.570	-0.240	0.037	0.250	0.700	0.557	230
High-Low	0.476	1.114	0.671	0.390	0.160	0.295		290
High-All	0.087	0.271	0.034	0.055	0.057	0.110		
High-Index	0.012	0.129	-0.052	0.003	0.011	0.046		

Resampling Result FSCORE	Mean	5%	25%	Median	75%	95%
Pseudo Low Mean	-0.062	-0.787	-0.267	-0.021	0.192	0.561
Pseudo Low	0	3	0	0	35	110
(p-Value)	0.000	0.003	0.000	0.000	0.035	0.110
Pseudo High Mean	-0.065	-0.824	-0.272	-0.021	0.192	0.588
Pseudo High	3	3	207	7	19	27
(p-Value)	0.003	0.003	0.207	0.007	0.019	0.027
Pseudo High-Low Mean	-0.003	-0.037	-0.005	0.000	0.001	0.026
Pseudo High-Low	0	1	0	0	7	14
(p-Value)	0.000	0.001	0.000	0.000	0.007	0.014
Pseudo High-All Mean	-0.001	0.017	0.002	-0.003	0.000	-0.003
Pseudo High-All	3	3	207	7	19	27
(p-Value)	0.003	0.003	0.207	0.007	0.019	0.027
Pseudo High-Index Mean	-0.077	-0.953	-0.220	-0.024	0.181	0.542
Pseudo High-Index	3	0	0	147	1000	1000
(p-Value)	0.003	0.000	0.000	0.147	1.000	1.000

5.4.2. High BM: FSCORE

Of the 2,071 observations 12 firm years achieve a FSCORE of one, and 48 a score of two, totalling 60/2,071 or 2.9% of the segment. These firms are considered low FSCORE firms and are shorted five months after fiscal year end for 12 or 24 months. The average low FSCORE firm earns its investors -54.3% (one-year return), -48.8% (one-year market adjusted return), -36.4% (two-year return) and -45.3% (two-year market adjusted return), average return rates in the period 2002-2013. Empirical low FSCORE portfolios show significant negative returns outperforming randomly selecting stocks from the segment. Given the low sample size of under 3% of the segment, stocks may not at all times be available for investors.

Of the 2,071 observations 193 achieve a FSCORE of eight and 37 accomplish nine, totalling 230/2,071 or 11.1% of the segment. Firms scoring eight or nine are considered high FSCORE firms and longed five months after fiscal year end for 12 or 24 months. High FSCORE firms create an average return of 4.7% (one-year market return), -0.3% (one-year market adjusted return), 15.5% (two-year market return) and 2.3% (two-year market adjusted return). The high FSCORE portfolio means outperform the pseudo high FSCORE portfolios means for all rates of return, including the slightly negative -0.3% one-year market adjusted return.

The performance from both the low FSCORE and high FSCORE portfolios significantly outperform random selection. In figures the high-low strategy earns its investor 59.0% (one-year market return), 48.6% (one-year market adjusted return), 51.9% (two-year market return) and 47.6% (two-year market adjusted return). Evaluating the pseudo high-low portfolios there is significant evidence that the empirical portfolio is able to outperform randomly selected firms.

The pseudo high-all portfolios evaluate whether high FSCORE firms are able to perform better than the average high book-to-market segment. Displaying significant excess returns the empirical high-all portfolios deliver 9.6% (one-year market return), 7.8% (one-year market adjusted return), 8.8% (two-year market return) and 8.7% (two-year market adjusted return) excess returns all significant.

Last, the pseudo high portfolios less the index averages are examined. For one-year and two-year market adjusted return means the empirical portfolios are able to outperform the high-index pseudo portfolios. The high-index strategy earns its investor an average excess return of

-4.2% (one-year return), -0.6% (one-year market adjusted return), -3.3% (two-year return) and 1.2% (two-year market adjusted return), one- and two-year market returns being insignificant.

The FSCORE variable is, in the majority of the cases, able to select winners and losers using a buy-and-hold strategy longing high scoring firms and shorting low. The following tables examines the EESG variables and their ability to separate winners from losers.

Table 35a: ECNSCORE High Book-to-Market Firms

One-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	-0.050	-0.836	-0.256	0.023	0.220	0.513	0.530	2,071
ECNSCORE								
0-10	-0.196	-1.256	-0.495	-0.155	0.183	0.611	0.421	133
11-20	-0.144	-1.261	-0.415	-0.030	0.212	0.523	0.472	212
21-30	-0.137	-1.068	-0.401	-0.073	0.168	0.497	0.432	227
31-40	-0.011	-0.759	-0.209	0.046	0.233	0.504	0.550	220
41-50	0.009	-0.781	-0.232	0.070	0.245	0.587	0.577	208
51-60	0.019	-0.711	-0.178	0.083	0.266	0.564	0.571	224
61-70	-0.026	-0.659	-0.256	0.032	0.224	0.440	0.563	197
71-80	-0.052	-0.674	-0.283	0.008	0.161	0.423	0.514	185
81-90	-0.021	-0.727	-0.161	0.038	0.209	0.464	0.570	242
91-100	0.004	-0.680	-0.158	0.044	0.238	0.489	0.587	223
Low Score (0-20)	-0.164	-1.259	-0.446	-0.079	0.201	0.557	0.452	345
High Score (81-100)	-0.009	-0.705	-0.159	0.041	0.223	0.476	0.578	465
High - Low	0.155	0.554	0.286	0.119	0.022	-0.081		810
High-All	0.041	0.131	0.096	0.018	0.003	-0.037		
High-Index	-0.098	-0.125	-0.081	-0.088	-0.073	-0.141		

Resampling Result	Mean	5%	25%	Median	75%	95%		
ECNSCORE								
Pseudo Low Mean	-0.049	-0.831	-0.257	0.024	0.217	0.506		
Pseudo Low	0	0	0	0	202	940		
(p-Value)	0.000	0.000	0.000	0.000	0.202	0.940		
Pseudo High Mean	-0.050	-0.837	-0.259	0.023	0.217	0.509		
Pseudo High	6	7	0	131	373	886		
(p-Value)	0.006	0.007	0.000	0.131	0.373	0.886		
Pseudo High-Low Mean	-0.001	-0.006	-0.002	-0.001	0.000	0.003		
Pseudo High-Low	0	0	0	0	177	973		
(p-Value)	0.000	0.000	0.000	0.000	0.177	0.973		
Pseudo High-All Mean	-0.001	-0.002	-0.003	0.000	-0.003	-0.004		
Pseudo High-All	6	7	0	131	373	886		
(p-Value)	0.006	0.007	0.000	0.131	0.373	0.886		
Pseudo High-Index Mean	0.048	-0.712	-0.178	0.111	0.290	0.650		
Pseudo High-Index	1000	0	0	1000	1000	1000		
(p-Value)	1.000	0.000	0.000	1.000	1.000	1.000		

Table 35b: ECNSCORE High Book-to-Market Firms

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	-0.080	-0.697	-0.242	-0.046	0.120	0.398	0.432	2,071
ECNSCORE								
0-10	-0.181	-1.092	-0.478	-0.127	0.122	0.458	0.406	133
11-20	-0.153	-1.208	-0.324	-0.086	0.106	0.442	0.377	212
21-30	-0.166	-0.970	-0.360	-0.112	0.073	0.360	0.348	227
31-40	-0.041	-0.544	-0.197	-0.013	0.157	0.412	0.486	220
41-50	-0.048	-0.584	-0.227	-0.030	0.112	0.414	0.457	208
51-60	-0.029	-0.476	-0.222	-0.023	0.145	0.525	0.473	224
61-70	-0.050	-0.494	-0.186	-0.011	0.113	0.341	0.482	197
71-80	-0.080	-0.537	-0.195	-0.060	0.067	0.285	0.373	185
81-90	-0.054	-0.538	-0.208	-0.029	0.117	0.317	0.450	242
91-100	-0.042	-0.460	-0.199	-0.041	0.137	0.388	0.448	223
Low Score (0-20)	-0.163	-1.163	-0.383	-0.102	0.112	0.448	0.388	345
High Score (81-100)	-0.048	-0.501	-0.204	-0.035	0.127	0.351	0.449	465
High-Low	0.115	0.662	0.179	0.067	0.015	-0.097		810
High-All	0.032	0.196	0.038	0.011	0.006	-0.047		
High-Index	-0.052	0.010	-0.056	-0.049	-0.046	-0.130		

Resampling Result	Mean	5%	25%	Median	75%	95%		
ECNSCORE								
Pseudo Low Mean	-0.080	-0.686	-0.241	-0.047	0.120	0.398		
Pseudo Low	0	0	0	2	309	905		
(p-Value)	0.000	0.000	0.000	0.002	0.309	0.905		
Pseudo High Mean	-0.081	-0.687	-0.241	-0.047	0.118	0.397		
Pseudo High	14	0	18	178	248	947		
(p-Value)	0.014	0.000	0.018	0.178	0.248	0.947		
Pseudo High-Low Mean	-0.001	-0.001	0.000	0.000	-0.001	0.000		
Pseudo High-Low	0	0	0	1	218	969		
(p-Value)	0.000	0.000	0.000	0.001	0.218	0.969		
Pseudo High-All Mean	0.000	0.010	0.000	-0.001	-0.002	-0.001		
Pseudo High-All	14	0	18	178	248	947		
(p-Value)	0.014	0.000	0.018	0.178	0.248	0.947		
Pseudo High-Index Mean	-0.029	-0.698	-0.186	0.001	0.164	0.527		
Pseudo High-Index	938	0	0	1000	1000	1000		
(p-Value)	0.938	0.000	0.000	1.000	1.000	1.000		

Table 35c: ECNSCORE High Book-to-Market Firms

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.067	-0.812	-0.193	0.121	0.378	0.794	0.620	2,071
ECNSCORE								
0-10	0.012	-0.870	-0.311	0.091	0.402	0.797	0.594	133
11-20	0.002	-1.234	-0.277	0.074	0.426	0.882	0.575	212
21-30	-0.030	-1.047	-0.301	0.041	0.368	0.839	0.537	227
31-40	0.081	-0.708	-0.182	0.135	0.342	0.762	0.632	220
41-50	0.096	-0.788	-0.222	0.101	0.391	0.865	0.611	208
51-60	0.144	-0.708	-0.083	0.175	0.413	0.890	0.701	224
61-70	0.102	-0.680	-0.127	0.108	0.412	0.685	0.635	197
71-80	0.021	-0.678	-0.230	0.090	0.294	0.683	0.578	185
81-90	0.089	-0.679	-0.114	0.151	0.347	0.602	0.674	242
91-100	0.123	-0.635	-0.144	0.175	0.416	0.785	0.646	223
Low Score (0-20)	0.006	-1.094	-0.290	0.081	0.417	0.849	0.583	345
High Score (81-100)	0.105	-0.658	-0.128	0.163	0.380	0.690	0.660	465
High - Low	0.099	0.436	0.162	0.082	-0.037	-0.160		810
High-All	0.039	0.155	0.065	0.041	0.002	-0.104		
High-Index	-0.083	-0.020	-0.082	-0.062	-0.088	-0.205		

Resampling Result	Mean	5%	25%	Median	75%	95%
ECNSCORE						
Pseudo Low Mean	0.066	-0.825	-0.193	0.123	0.376	0.785
Pseudo Low	11	3	2	41	944	917
(p-Value)	0.011	0.003	0.002	0.041	0.944	0.917
Pseudo High Mean	0.066	-0.827	-0.193	0.122	0.376	0.789
Pseudo High	29	4	6	29	459	974
(p-Value)	0.029	0.004	0.006	0.029	0.459	0.974
Pseudo High-Low Mean	0.000	-0.002	0.000	-0.001	0.000	0.005
Pseudo High-Low	2	1	0	7	869	994
(p-Value)	0.002	0.001	0.000	0.007	0.869	0.994
Pseudo High-All Mean	-0.001	-0.015	0.000	0.001	-0.002	-0.005
Pseudo High-All	29	4	6	29	459	974
(p-Value)	0.029	0.004	0.006	0.029	0.459	0.974
Pseudo High-Index Mean	0.148	-0.807	-0.111	0.184	0.464	0.995
Pseudo High-Index	1000	0	179	1000	1000	1000
(p-Value)	1.000	0.000	0.179	1.000	1.000	1.000

Table 35d: ECNSCORE High Book-to-Market Firms

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	-0.064	-0.841	-0.274	-0.018	0.193	0.591	0.477	2,071
ECNSCORE								
0-10	-0.090	-0.956	-0.319	-0.003	0.185	0.617	0.496	133
11-20	-0.125	-1.298	-0.356	-0.039	0.236	0.713	0.472	212
21-30	-0.165	-1.040	-0.422	-0.069	0.164	0.582	0.419	227
31-40	-0.046	-0.758	-0.304	-0.013	0.242	0.556	0.473	220
41-50	-0.055	-0.749	-0.274	-0.025	0.183	0.662	0.457	208
51-60	-0.001	-0.798	-0.205	0.017	0.242	0.695	0.536	224
61-70	-0.017	-0.665	-0.229	0.032	0.208	0.509	0.543	197
71-80	-0.091	-0.645	-0.263	-0.071	0.101	0.401	0.405	185
81-90	-0.038	-0.636	-0.175	-0.015	0.165	0.380	0.488	242
91-100	-0.027	-0.681	-0.234	-0.005	0.185	0.604	0.484	223
Low Score (0-20)	-0.111	-1.166	-0.342	-0.025	0.217	0.676	0.481	345
High Score (81-100)	-0.033	-0.658	-0.204	-0.011	0.174	0.487	0.486	465
High-Low	0.078	0.508	0.138	0.015	-0.042	-0.189		810
High-All	0.031	0.183	0.070	0.007	-0.019	-0.103		
High-Index	-0.044	0.042	-0.016	-0.045	-0.065	-0.167		

Resampling Result	Mean	5%	25%	Median	75%	95%
ECNSCORE						
Pseudo Low Mean	-0.064	-0.824	-0.271	-0.019	0.193	0.588
Pseudo Low	21	0	12	345	815	980
(p-Value)	0.021	0.000	0.012	0.345	0.815	0.980
Pseudo High Mean	-0.065	-0.831	-0.272	-0.018	0.193	0.589
Pseudo High	61	2	2	364	809	992
(p-Value)	0.061	0.002	0.002	0.364	0.809	0.992
Pseudo High-Low Mean	0.000	-0.007	-0.001	0.000	0.000	0.001
Pseudo High-Low	7	0	0	301	892	999
(p-Value)	0.007	0.000	0.000	0.301	0.892	0.999
Pseudo High-All Mean	-0.001	0.010	0.001	-0.001	0.000	-0.001
Pseudo High-All	61	2	2	364	809	992
(p-Value)	0.061	0.002	0.002	0.364	0.809	0.992
Pseudo High-Index Mean	-0.021	-0.873	-0.256	0.026	0.257	0.757
Pseudo High-Index	891	0	0	1000	1000	1000
(p-Value)	0.891	0.000	0.000	1.000	1.000	1.000

5.4.3. High BM: EESG Economic

Firms scoring between 0-20 are considered low ECNSCORE firms and shorted five months after fiscal year end for 12 or 24 months. The average low ECNSCORE firm earns its investors -16.4% (one-year return), -16.3% (one-year market adjusted return), 0.6% (two-year return) and -11.1% (two-year market adjusted return), average return rates in the period 2002-2013. Of the 2,071 observations 133 firm years achieve a ECNSCORE between 0-10, and 212 a score between 11-20, totalling 345/2,071 or 16.7% of the segment. The low ECNSCORE portfolio is able to deliver significant negative returns in regards to means across all rates of return.

Of the 2,071 observations 242 achieve an ECNSCORE between 81-90 and 223 accomplish a score from 91-100, totalling 4652,071 or 22.5% of the segment. Firms scoring between 81-90 or from 91-100 are considered high ECNSCORE firms and longed five months after fiscal year end for 12 or 24 months. High ECNSCORE firms create an average return of -0.9% (one-year market return), -4.8% (one-year market adjusted return), 10.5% (two-year market return) and -3.3% (two-year market adjusted return). The high ECNSCORE portfolio means outperform the pseudo high ECNSCORE portfolios means for one-year market return, one-year market adjusted return and two-year market return. In the case of two-year market adjusted return the alternative hypothesis is rejected with a p-value of 0.061, slightly above the critical value 0.05.

In figures the high-low strategy earns its investor 15.5% (one-year market return), 11.5% (one-year market adjusted return), 9.9% (two-year market return) and 7.8% (two-year market adjusted return). Evaluating the pseudo high-low portfolios there is significant evidence that the empirical portfolio is able to outperform randomly selected firms.

The pseudo high-all portfolio averages are examined to determine whether the empirical portfolios are able to outperform the high book-to-market segment. The high-all strategy earns its investor an average excess return of 4.1% (one-year return), 3.2% (one-year market adjusted return), 3.9% (two-year return) and 3.1% (two-year market adjusted return) of which all but two-year market adjusted returns are significant.

The pseudo high-index portfolios evaluate whether high ECNSCORE firms are able to perform better than the LA4CTYUS index. Displaying insignificant excess returns the empirical high-

index portfolios deliver -9.8% (one-year market return), -5.2% (one-year market adjusted return), -8.3% (two-year market return) and -4.4% (two-year market adjusted return) excess returns.

The ECNSCORE variable is able to select losers enabling the ability to short low scoring firms. Especially the range 0-30 displays below average high bm returns. The variable is also able to, in most cases, show significant winners.

Table 36a: ENVSCORE High Book-to-Market Firms

One-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	-0.050	-0.836	-0.256	0.023	0.220	0.513	0.530	2,071
ENVSCORE								
0-10	-0.148	-1.035	-0.479	-0.064	0.246	0.487	0.448	96
11-20	-0.066	-0.936	-0.295	0.011	0.225	0.512	0.513	610
21-30	-0.067	-0.921	-0.243	0.019	0.179	0.478	0.515	231
31-40	-0.063	-0.863	-0.261	0.000	0.233	0.544	0.500	136
41-50	-0.059	-0.773	-0.357	-0.002	0.208	0.543	0.492	130
51-60	-0.014	-0.699	-0.273	0.054	0.232	0.566	0.580	112
61-70	0.007	-0.536	-0.180	0.052	0.208	0.468	0.579	126
71-80	-0.075	-0.887	-0.233	0.013	0.200	0.434	0.518	168
81-90	-0.011	-0.747	-0.218	0.055	0.212	0.484	0.578	225
91-100	-0.003	-0.671	-0.214	0.048	0.237	0.493	0.574	237
Low Score (0-20)	-0.077	-0.949	-0.320	0.001	0.228	0.508	0.504	706
High Score (81-100)	-0.007	-0.708	-0.216	0.051	0.225	0.488	0.576	462
High - Low	0.070	0.241	0.104	0.050	-0.003	-0.020		1,168
High-All	0.042	0.128	0.040	0.029	0.005	-0.025		
High-Index	-0.096	-0.129	-0.138	-0.077	-0.071	-0.128		

Resampling Result	Mean	5%	25%	Median	75%	95%
ENVSCORE						
Pseudo Low Mean	-0.050	-0.839	-0.258	0.022	0.218	0.510
Pseudo Low	27	6	4	36	811	428
(p-Value)	0.027	0.006	0.004	0.036	0.811	0.428
Pseudo High Mean	-0.050	-0.835	-0.259	0.023	0.217	0.508
Pseudo High	5	10	38	46	313	772
(p-Value)	0.005	0.010	0.038	0.046	0.313	0.772
Pseudo High-Low Mean	0.000	0.005	-0.001	0.000	-0.001	-0.003
Pseudo High-Low	1	2	1	4	550	709
(p-Value)	0.001	0.002	0.001	0.004	0.550	0.709
Pseudo High-All Mean	-0.001	0.001	-0.003	0.000	-0.004	-0.005
Pseudo High-All	5	10	38	46	313	772
(p-Value)	0.005	0.010	0.038	0.046	0.313	0.772
Pseudo High-Index Mean	0.046	-0.706	-0.121	0.100	0.288	0.636
Pseudo High-Index	1000	0	727	1000	1000	1000
(p-Value)	1.000	0.000	0.727	1.000	1.000	1.000

Table 36b: ENVSCORE High Book-to-Market Firms

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	-0.080	-0.697	-0.242	-0.046	0.120	0.398	0.432	2,071
ENVSCORE								
0-10	-0.160	-0.830	-0.363	-0.114	0.100	0.402	0.406	96
11-20	-0.084	-0.779	-0.255	-0.041	0.143	0.418	0.451	610
21-30	-0.099	-0.784	-0.225	-0.054	0.104	0.362	0.407	231
31-40	-0.087	-0.724	-0.225	-0.027	0.105	0.434	0.456	136
41-50	-0.073	-0.685	-0.271	-0.073	0.138	0.430	0.423	130
51-60	-0.035	-0.489	-0.217	-0.032	0.178	0.423	0.455	112
61-70	-0.049	-0.470	-0.197	-0.039	0.122	0.372	0.413	126
71-80	-0.105	-0.583	-0.245	-0.063	0.098	0.320	0.405	168
81-90	-0.065	-0.559	-0.209	-0.039	0.100	0.353	0.422	225
91-100	-0.057	-0.542	-0.229	-0.046	0.122	0.395	0.435	237
Low Score (0-20)	-0.094	-0.786	-0.269	-0.051	0.137	0.416	0.445	706
High Score (81-100)	-0.061	-0.550	-0.219	-0.042	0.111	0.375	0.429	462
High-Low	0.033	0.235	0.050	0.008	-0.026	-0.041		1,168
High-All	0.019	0.147	0.022	0.004	-0.009	-0.023		
High-Index	-0.064	-0.039	-0.071	-0.056	-0.062	-0.106		

Resampling Result	Mean	5%	25%	Median	75%	95%
ENVSCORE						
Pseudo Low Mean	-0.080	-0.688	-0.239	-0.046	0.120	0.399
Pseudo Low	104	17	30	310	958	788
(p-Value)	0.104	0.017	0.030	0.310	0.958	0.788
Pseudo High Mean	-0.081	-0.690	-0.242	-0.048	0.118	0.397
Pseudo High	92	8	124	307	704	750
(p-Value)	0.092	0.008	0.124	0.307	0.704	0.750
Pseudo High-Low Mean	-0.002	-0.001	-0.002	-0.002	-0.001	-0.002
Pseudo High-Low	32	1	16	265	926	826
(p-Value)	0.032	0.001	0.016	0.265	0.926	0.826
Pseudo High-All Mean	-0.001	0.007	0.000	-0.002	-0.002	-0.001
Pseudo High-All	92	8	124	307	704	750
(p-Value)	0.092	0.008	0.124	0.307	0.704	0.750
Pseudo High-Index Mean	-0.017	-0.650	-0.170	0.008	0.180	0.504
Pseudo High-Index	1000	0	0	1000	1000	1000
(p-Value)	1.000	0.000	0.000	1.000	1.000	1.000

Table 36c: ENVSCORE High Book-to-Market Firms

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.067	-0.812	-0.193	0.121	0.378	0.794	0.620	2,071
ENVSCORE								
0-10	0.028	-0.745	-0.254	0.072	0.323	0.705	0.573	96
11-20	0.042	-0.873	-0.274	0.107	0.390	0.839	0.585	610
21-30	0.028	-0.983	-0.183	0.119	0.347	0.702	0.636	231
31-40	0.060	-0.878	-0.175	0.161	0.401	0.811	0.640	136
41-50	0.044	-1.067	-0.240	0.086	0.346	0.768	0.585	130
51-60	0.161	-0.675	-0.053	0.181	0.417	0.868	0.723	112
61-70	0.087	-0.689	-0.146	0.163	0.345	0.737	0.659	126
71-80	0.041	-0.844	-0.209	0.042	0.336	0.667	0.560	168
81-90	0.108	-0.678	-0.142	0.139	0.365	0.753	0.644	225
91-100	0.123	-0.693	-0.066	0.173	0.404	0.772	0.675	237
Low Score (0-20)	0.040	-0.856	-0.271	0.103	0.381	0.820	0.584	706
High Score (81-100)	0.116	-0.685	-0.103	0.156	0.385	0.763	0.660	462
High-Low	0.076	0.170	0.168	0.054	0.005	-0.058		1,168
High-All	0.049	0.127	0.090	0.035	0.007	-0.031		
High-Index	-0.072	-0.048	-0.057	-0.068	-0.082	-0.132		

Resampling Result	Mean	5%	25%	Median	75%	95%
ENVSCORE						
Pseudo Low Mean	0.067	-0.825	-0.193	0.122	0.377	0.793
Pseudo Low	49	338	0	100	566	775
(p-Value)	0.049	0.338	0.000	0.100	0.566	0.775
Pseudo High Mean	0.068	-0.817	-0.192	0.124	0.377	0.792
Pseudo High	16	26	2	64	359	795
(p-Value)	0.016	0.026	0.002	0.064	0.359	0.795
Pseudo High-Low Mean	0.002	0.008	0.001	0.001	0.000	-0.001
Pseudo High-Low	5	65	0	17	416	853
(p-Value)	0.005	0.065	0.000	0.017	0.416	0.853
Pseudo High-All Mean	0.002	-0.005	0.001	0.002	-0.001	-0.002
Pseudo High-All	16	26	2	64	359	795
(p-Value)	0.016	0.026	0.002	0.064	0.359	0.795
Pseudo High-Index Mean	0.140	-0.769	-0.135	0.191	0.459	0.925
Pseudo High-Index	1000	0	5	1000	1000	1000
(p-Value)	1.000	0.000	0.005	1.000	1.000	1.000

Table 36d: ENVSCORE High Book-to-Market Firms

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	-0.064	-0.841	-0.274	-0.018	0.193	0.591	0.477	2,071
ENVSCORE								
0-10	-0.147	-0.735	-0.465	-0.122	0.198	0.482	0.385	96
11-20	-0.073	-0.907	-0.317	-0.046	0.232	0.642	0.462	610
21-30	-0.101	-0.927	-0.268	-0.005	0.163	0.562	0.481	231
31-40	-0.069	-0.774	-0.218	0.014	0.225	0.470	0.507	136
41-50	-0.071	-0.833	-0.283	-0.038	0.158	0.717	0.454	130
51-60	0.025	-0.620	-0.148	0.046	0.203	0.778	0.554	112
61-70	-0.043	-0.673	-0.249	-0.013	0.161	0.498	0.492	126
71-80	-0.075	-0.798	-0.309	-0.024	0.183	0.482	0.494	168
81-90	-0.044	-0.731	-0.243	-0.023	0.141	0.570	0.467	225
91-100	-0.030	-0.689	-0.206	-0.003	0.188	0.594	0.498	237
Low Score (0-20)	-0.083	-0.884	-0.337	-0.057	0.227	0.621	0.452	706
High Score (81-100)	-0.037	-0.710	-0.224	-0.012	0.165	0.582	0.483	462
High-Low	0.046	0.174	0.114	0.044	-0.062	-0.038		1,168
High-All	0.027	0.131	0.050	0.005	-0.028	-0.008		
High-Index	-0.048	-0.010	-0.036	-0.046	-0.074	-0.072		

Resampling Result	Mean	5%	25%	Median	75%	95%		
ENVSCORE								
Pseudo Low Mean	-0.064	-0.829	-0.271	-0.017	0.193	0.592		
Pseudo Low	84	207	1	3	988	781		
(p-Value)	0.084	0.207	0.001	0.003	0.988	0.781		
Pseudo High Mean	-0.064	-0.827	-0.271	-0.018	0.194	0.591		
Pseudo High	94	37	36	399	926	605		
(p-Value)	0.094	0.037	0.036	0.399	0.926	0.605		
Pseudo High-Low Mean	0.000	0.002	0.000	0.000	0.000	-0.001		
Pseudo High-Low	37	27	0	23	994	736		
(p-Value)	0.037	0.027	0.000	0.023	0.994	0.736		
Pseudo High-All Mean	0.001	0.014	0.002	0.000	0.001	0.001		
Pseudo High-All	94	37	36	399	926	605		
(p-Value)	0.094	0.037	0.036	0.399	0.926	0.605		
Pseudo High-Index Mean	-0.016	-0.817	-0.235	0.029	0.268	0.664		
Pseudo High-Index	951	0	0	1000	1000	1000		
(p-Value)	0.951	0.000	0.000	1.000	1.000	1.000		

5.4.4. High BM: EESG Environmental

The average low ENVSCORE firm earns its investors -7.7% (one-year return), -9.4% (one-year market adjusted return), 4.0% (two-year return) and -8.3% (two-year market adjusted return), average return rates in the period 2002-2013. Of the 2,071 observations 96 firm years achieve an ENVSCORE between 0-10, and 610 a score between 11-20, totalling 706/2,071 or 34.1% of the index. Low ENVSCORE firms display below average negative returns significantly lower than the high book-to-market average for one- and two-year market returns. In regards to one- and two-year market adjusted returns the empirical portfolios deliver below average, but insignificant returns.

High ENVSCORE firms create an average return of -0.7% (one-year market return), -6.1% (one-year market adjusted return), 11.6% (two-year market return) and -3.7% (two-year market adjusted return). Similar to low ENVSCORE firm high ENVSCORE portfolios outperform the pseudo portfolios in regard to one-year and two-year market returns. For market adjusted returns are equal or lower than the average high bm segment, yet insignificant.

Due to the results from both the low- and high-score portfolios the high-low strategy fails to deliver above average returns. In figures the high-low strategy earns its investor 0.4% (one-year return), -0.6% (one-year market adjusted return), 0.6% (two-year return) and -0.6% (two-year market adjusted return). Evaluating the pseudo high-low portfolios there is no evidence that the empirical portfolio is able to outperform randomly selected firms.

The high-all strategy earns its investor an average return of 4.2% (one-year return), 1.9% (one-year market adjusted return), 4.9% (two-year return) and 2.7% (two-year market adjusted return). the high ENVSCORE portfolios unable to select winners. The high-index strategy earns -9.6% (one-year return), -6.4% (one-year market adjusted return), -7.2% (two-year return) and -4.8% (two-year market adjusted return) negative returns rejecting the null of empirical > pseudo returns, implicating that pseudo portfolios yield significant higher returns.

Table 37a: CGVSCORE High Book-to-Market Firms

One-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	-0.050	-0.836	-0.256	0.023	0.220	0.513	0.530	2,071
CGVSCORE								
0-10	-0.231	-0.768	-0.557	-0.229	0.170	0.270	0.300	10
11-20	0.045	-0.476	-0.092	0.148	0.235	0.410	0.667	27
21-30	0.012	-0.536	-0.135	0.097	0.200	0.416	0.560	25
31-40	0.088	-0.415	-0.102	0.005	0.268	0.828	0.524	42
41-50	-0.003	-0.849	-0.172	0.046	0.268	0.514	0.568	88
51-60	-0.077	-1.016	-0.292	0.010	0.216	0.525	0.506	164
61-70	-0.058	-0.724	-0.284	0.026	0.205	0.513	0.530	285
71-80	-0.052	-0.753	-0.256	0.017	0.215	0.477	0.519	505
81-90	-0.074	-0.903	-0.313	0.006	0.216	0.508	0.510	612
91-100	-0.016	-0.747	-0.219	0.048	0.213	0.520	0.585	313
Low Score (0-20)	-0.029	-0.555	-0.217	0.046	0.217	0.372	0.568	37
High Score (81-100)	-0.054	-0.850	-0.281	0.020	0.215	0.512	0.535	925
High-Low	-0.025	-0.295	-0.064	-0.025	-0.002	0.139		962
High-All	-0.005	-0.014	-0.025	-0.002	-0.006	-0.001		
High-Index	-0.143	-0.271	-0.203	-0.108	-0.081	-0.105		

Resampling Result	Mean	5%	25%	Median	75%	95%		
CGVSCORE								
Pseudo Low Mean	-0.047	-0.780	-0.251	0.023	0.213	0.487		
Pseudo Low	578	857	611	597	512	131		
(p-Value)	0.578	0.857	0.611	0.597	0.512	0.131		
Pseudo High Mean	-0.050	-0.840	-0.257	0.024	0.219	0.511		
Pseudo High	653	614	911	650	655	513		
(p-Value)	0.653	0.614	0.911	0.650	0.655	0.513		
Pseudo High-Low Mean	-0.003	-0.060	-0.006	0.000	0.005	0.024		
Pseudo High-Low	594	870	669	618	545	140		
(p-Value)	0.594	0.870	0.669	0.618	0.545	0.140		
Pseudo High-All Mean	0.000	-0.004	-0.001	0.001	-0.002	-0.002		
Pseudo High-All	653	614	911	650	655	513		
(p-Value)	0.653	0.614	0.911	0.650	0.655	0.513		
Pseudo High-Index Mean	0.094	-0.569	-0.054	0.132	0.300	0.615		
Pseudo High-Index	1000	0	1000	1000	1000	1000		
(p-Value)	1.000	0.000	1.000	1.000	1.000	1.000		

Table 37b: CGVSCORE High Book-to-Market Firms

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	-0.080	-0.697	-0.242	-0.046	0.120	0.398	0.432	2,071
CGVSCORE								
0-10	-0.190	-0.745	-0.444	-0.170	0.170	0.270	0.300	10
11-20	0.011	-0.246	-0.114	-0.021	0.175	0.501	0.481	27
21-30	0.001	-0.572	-0.065	0.053	0.133	0.327	0.680	25
31-40	0.007	-0.409	-0.178	-0.064	0.091	0.547	0.452	42
41-50	-0.039	-0.572	-0.239	-0.020	0.172	0.483	0.477	88
51-60	-0.115	-0.803	-0.286	-0.057	0.091	0.362	0.427	164
61-70	-0.104	-0.747	-0.283	-0.050	0.080	0.450	0.404	285
71-80	-0.072	-0.596	-0.226	-0.044	0.127	0.382	0.434	505
81-90	-0.101	-0.790	-0.278	-0.062	0.116	0.360	0.415	612
91-100	-0.047	-0.525	-0.193	-0.037	0.124	0.404	0.454	313
Low Score (0-20)	-0.043	-0.381	-0.203	-0.061	0.174	0.439	0.432	37
High Score (81-100)	-0.083	-0.700	-0.249	-0.054	0.119	0.375	0.428	925
High-Low	-0.040	-0.320	-0.046	0.008	-0.055	-0.063		962
High-All	-0.003	-0.003	-0.007	-0.008	-0.002	-0.023		
High-Index	-0.086	-0.189	-0.101	-0.068	-0.054	-0.106		

Resampling Result	Mean	5%	25%	Median	75%	95%
CGVSCORE						
Pseudo Low Mean	-0.079	-0.654	-0.234	-0.044	0.117	0.374
Pseudo Low	735	951	650	370	845	767
(p-Value)	0.735	0.951	0.650	0.370	0.845	0.767
Pseudo High Mean	-0.080	-0.692	-0.241	-0.046	0.119	0.399
Pseudo High	627	608	737	856	575	893
(p-Value)	0.627	0.608	0.737	0.856	0.575	0.893
Pseudo High-Low Mean	-0.001	-0.038	-0.007	-0.002	0.003	0.025
Pseudo High-Low	749	947	677	420	835	814
(p-Value)	0.749	0.947	0.677	0.420	0.835	0.814
Pseudo High-All Mean	0.000	0.005	0.001	0.000	-0.001	0.001
Pseudo High-All	627	608	737	856	575	893
(p-Value)	0.627	0.608	0.737	0.856	0.575	0.893
Pseudo High-Index Mean	0.006	-0.503	-0.139	0.022	0.173	0.505
Pseudo High-Index	1000	0	1	1000	1000	1000
(p-Value)	1.000	0.000	0.001	1.000	1.000	1.000

Table 37c: CGVSCORE High Book-to-Market Firms

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.067	-0.812	-0.193	0.121	0.378	0.794	0.620	2,071
CGVSCORE								
0-10	-0.039	-0.784	-0.173	-0.060	0.261	0.566	0.400	10
11-20	0.221	-0.520	0.110	0.207	0.450	0.789	0.778	27
21-30	0.216	-0.493	0.007	0.254	0.552	0.806	0.760	25
31-40	0.209	-0.360	-0.092	0.140	0.385	1.104	0.643	42
41-50	0.057	-0.999	-0.241	0.142	0.424	0.851	0.614	88
51-60	0.060	-0.912	-0.231	0.157	0.393	0.814	0.622	164
61-70	0.034	-0.811	-0.208	0.113	0.338	0.762	0.604	285
71-80	0.060	-0.809	-0.215	0.110	0.380	0.763	0.622	505
81-90	0.038	-0.912	-0.231	0.086	0.372	0.727	0.583	612
91-100	0.128	-0.616	-0.058	0.171	0.381	0.800	0.687	313
Low Score (0-20)	0.151	-0.592	0.033	0.135	0.399	0.729	0.676	37
High Score (81-100)	0.069	-0.812	-0.172	0.115	0.375	0.752	0.618	925
High-Low	-0.082	-0.220	-0.206	-0.020	-0.024	0.023		962
High-All	0.002	0.001	0.021	-0.006	-0.003	-0.043		
High-Index	-0.119	-0.174	-0.126	-0.109	-0.093	-0.144		

Resampling Result	Mean	5%	25%	Median	75%	95%
CGVSCORE						
Pseudo Low Mean	0.071	-0.755	-0.181	0.125	0.373	0.747
Pseudo Low	810	710	980	532	635	499
(p-Value)	0.810	0.710	0.980	0.532	0.635	0.499
Pseudo High Mean	0.067	-0.825	-0.192	0.122	0.378	0.794
Pseudo High	458	510	131	759	572	959
(p-Value)	0.458	0.510	0.131	0.759	0.572	0.959
Pseudo High-Low Mean	-0.004	-0.071	-0.011	-0.003	0.004	0.047
Pseudo High-Low	800	686	960	561	628	595
(p-Value)	0.800	0.686	0.960	0.561	0.628	0.595
Pseudo High-All Mean	0.000	-0.013	0.001	0.001	0.000	0.000
Pseudo High-All	458	510	131	759	572	959
(p-Value)	0.458	0.510	0.131	0.759	0.572	0.959
Pseudo High-Index Mean	0.186	-0.651	-0.066	0.231	0.470	0.938
Pseudo High-Index	1000	0	999	1000	1000	1000
(p-Value)	1.000	0.000	0.999	1.000	1.000	1.000

Table 37d: CGVSCORE High Book-to-Market Firms

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	-0.064	-0.841	-0.274	-0.018	0.193	0.591	0.477	2,071
CGVSCORE								
0-10	-0.047	-0.626	-0.291	-0.045	0.260	0.460	0.500	10
11-20	0.061	-0.393	-0.188	0.108	0.299	0.460	0.519	27
21-30	0.117	-0.409	-0.188	0.068	0.365	0.639	0.600	25
31-40	0.020	-0.455	-0.311	-0.072	0.247	0.762	0.429	42
41-50	-0.062	-0.835	-0.366	-0.012	0.245	0.667	0.489	88
51-60	-0.098	-1.006	-0.298	-0.031	0.190	0.560	0.445	164
61-70	-0.122	-0.891	-0.361	-0.082	0.159	0.475	0.435	285
71-80	-0.053	-0.777	-0.245	-0.015	0.201	0.582	0.479	505
81-90	-0.079	-0.898	-0.294	-0.003	0.178	0.560	0.492	612
91-100	-0.022	-0.699	-0.205	-0.011	0.191	0.668	0.489	313
Low Score (0-20)	0.032	-0.456	-0.216	0.067	0.288	0.460	0.514	37
High Score (81-100)	-0.060	-0.830	-0.264	-0.006	0.182	0.596	0.491	925
High-Low	-0.092	-0.374	-0.048	-0.072	-0.106	0.137		962
High-All	0.005	0.011	0.010	0.012	-0.011	0.006		
High-Index	-0.071	-0.131	-0.076	-0.040	-0.057	-0.058		

Resampling Result	Mean	5%	25%	Median	75%	95%
CGVSCORE						
Pseudo Low Mean	-0.066	-0.787	-0.265	-0.021	0.188	0.538
Pseudo Low	910	949	680	913	898	310
(p-Value)	0.910	0.949	0.680	0.913	0.898	0.310
Pseudo High Mean	-0.064	-0.833	-0.272	-0.018	0.194	0.593
Pseudo High	340	397	280	168	793	400
(p-Value)	0.340	0.397	0.280	0.168	0.793	0.400
Pseudo High-Low Mean	0.002	-0.046	-0.007	0.004	0.005	0.054
Pseudo High-Low	900	935	656	883	922	319
(p-Value)	0.900	0.935	0.656	0.883	0.922	0.319
Pseudo High-All Mean	0.000	0.008	0.001	0.000	0.001	0.002
Pseudo High-All	340	397	280	168	793	400
(p-Value)	0.340	0.397	0.280	0.168	0.793	0.400
Pseudo High-Index Mean	0.006	-0.702	-0.196	0.022	0.251	0.651
Pseudo High-Index	1000	0	0	1000	1000	1000
(p-Value)	1.000	0.000	0.000	1.000	1.000	1.000

5.4.5. High BM: EESG Governmental

The average low CGVSCORE firm earns its investors -2.9% (one-year return), -4.3% (one-year market adjusted return), 15.1% (two-year return) and 3.2% (two-year market adjusted return), average return rates in the period 2002-2013. Of the 2,071 observations 10 firm years achieve an ENVSCORE between 0-10, and 27 a score between 11-20, totalling 37/2,071 or 1.8% of the segment. Low CGVSCORE firms do not significantly outperform random selection for any return rate.

High CGVSCORE firms create an average return of -5.4% (one-year market return), -8.3% (one-year market adjusted return), 6.9% (two-year market return) and -6.0% (two-year market adjusted return). With slightly below segment average returns for one-year market and one-year market adjusted returns, and marginally above segment average returns for two-year and two-year market adjusted returns, high CGVSCORE firms are judged insignificant.

In figures the high-low strategy earns its investor -2.5% (one-year return), -4.0% (one-year market adjusted return), -8.2% (two-year return) and -9.2% (two-year market adjusted return). Evaluating the pseudo high-low portfolios there is no evidence that the empirical portfolio is able to outperform randomly selected firms.

The high-all strategy earns its investor an average return of -0.5% (one-year return), -0.3% (one-year market adjusted return), 0.2% (two-year return) and 0.5% (two-year market adjusted return) judging high CGVSCORE portfolios unfit to select winners. The high-all strategy fails to deliver significant results when compared to the high book-to-market segment.

Last, the high-index portfolios test whether the high score portfolios are able to outperform the index average. For the CGVSCORE variable the high score portfolios are unable to show significant returns for all rates of return.

The CGVSCORE variable is unable to select winners and losers, yet separate between them making a buy-and-hold strategy shorting low scoring firms and longing high scoring firms to be advised against. Investors are likely better off picking stocks at random.

Table 38a: SOCSCORE High Book-to-Market Firms

One-Year Market Returns	Mean	10%	25%	Median	75%	90%	% Positive	n
All Firms	-0.050	-0.836	-0.256	0.023	0.220	0.513	0.530	2,071
SOCSCORE								
0-10	-0.072	-0.871	-0.362	-0.036	0.224	0.554	0.464	153
11-20	-0.066	-1.006	-0.264	0.026	0.215	0.487	0.525	318
21-30	-0.035	-0.912	-0.286	0.064	0.254	0.528	0.566	265
31-40	-0.091	-0.941	-0.284	-0.001	0.209	0.501	0.498	201
41-50	-0.033	-0.763	-0.251	-0.004	0.207	0.543	0.495	188
51-60	-0.044	-0.705	-0.264	0.024	0.187	0.512	0.549	175
61-70	-0.072	-0.893	-0.273	0.023	0.186	0.520	0.516	192
71-80	-0.054	-0.879	-0.250	0.028	0.214	0.488	0.523	193
81-90	-0.003	-0.729	-0.199	0.054	0.215	0.492	0.594	239
91-100	-0.027	-0.713	-0.232	0.020	0.242	0.498	0.537	147
Low Score (0-20)	-0.068	-0.962	-0.296	0.006	0.218	0.508	0.505	471
High Score (81-100)	-0.013	-0.723	-0.211	0.041	0.225	0.494	0.573	386
High-Low	0.056	0.239	0.084	0.035	0.007	-0.014		857
High-All	0.037	0.112	0.044	0.018	0.005	-0.019		
High-Index	-0.102	-0.144	-0.133	-0.088	-0.071	-0.122		

Resampling Result	Mean	5%	25%	Median	75%	95%
SOCSCORE						
Pseudo Low Mean	-0.050	-0.835	-0.259	0.023	0.218	0.509
Pseudo Low	152	23	106	136	483	470
(p-Value)	0.152	0.023	0.106	0.136	0.483	0.470
Pseudo High Mean	-0.049	-0.832	-0.257	0.024	0.218	0.506
Pseudo High	33	30	47	159	329	656
(p-Value)	0.033	0.030	0.047	0.159	0.329	0.656
Pseudo High-Low Mean	0.001	0.003	0.002	0.001	0.000	-0.003
Pseudo High-Low	23	4	15	76	374	608
(p-Value)	0.023	0.004	0.015	0.076	0.374	0.608
Pseudo High-All Mean	0.001	0.004	-0.001	0.001	-0.003	-0.007
Pseudo High-All	33	30	47	159	329	656
(p-Value)	0.033	0.030	0.047	0.159	0.329	0.656
Pseudo High-Index Mean	0.053	-0.688	-0.124	0.112	0.289	0.628
Pseudo High-Index	1000	0	663	1000	1000	1000
(p-Value)	1.000	0.000	0.663	1.000	1.000	1.000

Table 38b: SOCSCORE High Book-to-Market Firms

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	-0.080	-0.697	-0.242	-0.046	0.120	0.398	0.432	2,071
SOCSCORE								
0-10	-0.064	-0.647	-0.269	-0.043	0.134	0.467	0.444	153
11-20	-0.092	-0.802	-0.246	-0.042	0.144	0.371	0.447	318
21-30	-0.071	-0.746	-0.226	-0.031	0.140	0.456	0.464	265
31-40	-0.123	-0.933	-0.282	-0.063	0.123	0.399	0.433	201
41-50	-0.072	-0.532	-0.242	-0.068	0.106	0.394	0.378	188
51-60	-0.077	-0.536	-0.211	-0.061	0.080	0.395	0.411	175
61-70	-0.106	-0.780	-0.288	-0.095	0.121	0.345	0.391	192
71-80	-0.081	-0.814	-0.219	-0.027	0.104	0.360	0.451	193
81-90	-0.039	-0.522	-0.180	-0.024	0.108	0.398	0.456	239
91-100	-0.077	-0.554	-0.256	-0.072	0.118	0.379	0.408	147
Low Score (0-20)	-0.083	-0.752	-0.253	-0.042	0.141	0.402	0.446	471
High Score (81-100)	-0.054	-0.534	-0.209	-0.042	0.112	0.391	0.438	386
High-Low	0.029	0.218	0.044	0.000	-0.029	-0.011		857
High-All	0.027	0.163	0.032	0.004	-0.008	-0.008		
High-Index	-0.057	-0.023	-0.061	-0.056	-0.061	-0.091		

Resampling Result	Mean	5%	25%	Median	75%	95%
SOCSCORE						
Pseudo Low Mean	-0.080	-0.688	-0.241	-0.046	0.119	0.397
Pseudo Low	425	163	247	658	929	588
(p-Value)	0.425	0.163	0.247	0.658	0.929	0.588
Pseudo High Mean	-0.081	-0.690	-0.242	-0.048	0.117	0.396
Pseudo High	51	5	63	326	650	576
(p-Value)	0.051	0.005	0.063	0.326	0.650	0.576
Pseudo High-Low Mean	-0.001	-0.003	-0.001	-0.001	-0.002	-0.001
Pseudo High-Low	76	5	47	459	897	611
(p-Value)	0.076	0.005	0.047	0.459	0.897	0.611
Pseudo High-All Mean	-0.001	0.007	0.000	-0.002	-0.003	-0.002
Pseudo High-All	51	5	63	326	650	576
(p-Value)	0.051	0.005	0.063	0.326	0.650	0.576
Pseudo High-Index Mean	-0.024	-0.667	-0.180	0.008	0.178	0.487
Pseudo High-Index	979	0	0	1000	1000	1000
(p-Value)	0.979	0.000	0.000	1.000	1.000	1.000

Table 38c: SOCSCORE High Book-to-Market Firms

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.067	-0.812	-0.193	0.121	0.378	0.794	0.620	2,071
SOCSCORE								
0-10	0.078	-0.726	-0.256	0.103	0.415	0.863	0.601	153
11-20	0.054	-0.798	-0.207	0.115	0.356	0.734	0.613	318
21-30	0.074	-1.089	-0.178	0.152	0.396	0.860	0.668	265
31-40	-0.001	-0.984	-0.279	0.076	0.317	0.822	0.537	201
41-50	0.100	-0.697	-0.116	0.155	0.360	0.775	0.638	188
51-60	0.050	-0.701	-0.207	0.099	0.360	0.665	0.606	175
61-70	0.049	-0.993	-0.278	0.100	0.384	0.847	0.589	192
71-80	0.036	-0.896	-0.205	0.090	0.347	0.757	0.606	193
81-90	0.123	-0.698	-0.125	0.176	0.391	0.796	0.665	239
91-100	0.111	-0.580	-0.139	0.146	0.427	0.720	0.667	147
Low Score (0-20)	0.061	-0.774	-0.223	0.111	0.375	0.776	0.609	471
High Score (81-100)	0.118	-0.653	-0.130	0.164	0.405	0.767	0.666	386
High-Low	0.057	0.122	0.092	0.054	0.030	-0.009		857
High-All	0.052	0.160	0.062	0.043	0.027	-0.028		
High-Index	-0.070	-0.015	-0.084	-0.060	-0.063	-0.129		

Resampling Result	Mean	5%	25%	Median	75%	95%
SOCSCORE						
Pseudo Low Mean	0.066	-0.822	-0.193	0.122	0.376	0.789
Pseudo Low	430	722	153	261	492	385
(p-Value)	0.430	0.722	0.153	0.261	0.492	0.385
Pseudo High Mean	0.066	-0.824	-0.194	0.122	0.377	0.787
Pseudo High	13	5	17	41	104	698
(p-Value)	0.013	0.005	0.017	0.041	0.104	0.698
Pseudo High-Low Mean	0.000	-0.002	-0.001	0.000	0.001	-0.002
Pseudo High-Low	41	158	16	51	160	559
(p-Value)	0.041	0.158	0.016	0.051	0.160	0.559
Pseudo High-All Mean	-0.001	-0.011	-0.001	0.001	-0.001	-0.008
Pseudo High-All	13	5	17	41	104	698
(p-Value)	0.013	0.005	0.017	0.041	0.104	0.698
Pseudo High-Index Mean	0.136	-0.808	-0.110	0.182	0.439	0.915
Pseudo High-Index	1000	0	221	1000	1000	1000
(p-Value)	1.000	0.000	0.221	1.000	1.000	1.000

Table 38d: SOCSCORE High Book-to-Market Firms

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	-0.064	-0.841	-0.274	-0.018	0.193	0.591	0.477	2,071
SOCSCORE								
0-10	-0.019	-0.868	-0.274	0.027	0.294	0.616	0.516	153
11-20	-0.077	-0.750	-0.298	-0.057	0.211	0.561	0.443	318
21-30	-0.066	-0.935	-0.278	-0.002	0.245	0.674	0.487	265
31-40	-0.130	-0.976	-0.372	-0.045	0.167	0.641	0.453	201
41-50	-0.050	-0.704	-0.257	0.000	0.163	0.599	0.495	188
51-60	-0.103	-0.757	-0.316	-0.039	0.125	0.426	0.429	175
61-70	-0.090	-0.879	-0.296	-0.070	0.201	0.614	0.432	192
71-80	-0.040	-0.820	-0.199	0.021	0.225	0.572	0.518	193
81-90	-0.017	-0.663	-0.179	0.002	0.154	0.633	0.502	239
91-100	-0.038	-0.711	-0.212	0.017	0.189	0.493	0.524	147
Low Score (0-20)	-0.058	-0.788	-0.290	-0.030	0.238	0.579	0.467	471
High Score (81-100)	-0.025	-0.681	-0.191	0.008	0.168	0.580	0.510	386
High-Low	0.033	0.107	0.099	0.037	-0.070	0.000		857
High-All	0.039	0.160	0.082	0.025	-0.025	-0.011		
High-Index	-0.036	0.018	-0.004	-0.026	-0.071	-0.075		

Resampling Result	Mean	5%	25%	Median	75%	95%
SOCSCORE						
Pseudo Low Mean	-0.065	-0.830	-0.273	-0.019	0.194	0.591
Pseudo Low	635	715	258	254	990	378
(p-Value)	0.635	0.715	0.258	0.254	0.990	0.378
Pseudo High Mean	-0.063	-0.823	-0.271	-0.018	0.193	0.590
Pseudo High	46	17	0	72	881	584
(p-Value)	0.046	0.017	0.000	0.072	0.881	0.584
Pseudo High-Low Mean	0.002	0.008	0.001	0.001	0.000	-0.001
Pseudo High-Low	134	171	5	79	988	491
(p-Value)	0.134	0.171	0.005	0.079	0.988	0.491
Pseudo High-All Mean	0.001	0.018	0.002	-0.001	0.001	-0.001
Pseudo High-All	46	17	0	72	881	584
(p-Value)	0.046	0.017	0.000	0.072	0.881	0.584
Pseudo High-Index Mean	-0.027	-0.841	-0.268	0.008	0.265	0.665
Pseudo High-Index	665	0	0	948	1000	1000
(p-Value)	0.665	0.000	0.000	0.948	1.000	1.000

5.4.6. High BM: EESG Social

The average low SOCSCORE firm earns its investors -6.8% (one-year return), -8.3% (one-year market adjusted return), 6.1% (two-year return) and -5.8% (two-year market adjusted return), average return rates in the period 2002-2013. Of the 2,071 observations 153 firm years achieve an SOCSCORE between 0-10, and 318 a score between 11-20, totalling 471/2,071 or 22.7% of the segment. Providing below segment average returns for most rates of return except one-year market return and two-year market adjusted returns, low SOCSCORE firms do not significantly outperform random selection for any return rate.

High SOCSCORE firms create an average return of -1.3% (one-year market return), -5.4% (one-year market adjusted return), 11.8% (two-year market return) and -2.5% (two-year market adjusted return). With above average segment returns, the high ENVSCORE portfolios outperform the pseudo portfolios in all but one-year market adjusted returns with a p-value of 0.051, just above the significance level of 0.05.

In figures the high-low strategy earns its investor 5.6% (one-year return), 2.9% (one-year market adjusted return), 5.7% (two-year return) and 3.3% (two-year market adjusted return). Empirical portfolios outperform pseudo portfolios for one-year and two-year market returns. When it comes to market adjusted returns the empirical portfolios are unable to provide significant evidence of higher returns.

The high-all strategy earns its investor an average return of -10.2% (one-year return), -5.7% (one-year market adjusted return), -7.0% (two-year return) and -3.6% (two-year market adjusted return) judging high-all CGVSCORE portfolios able to select winners. The high-index strategy is able to deliver significant higher returns for most return rates with the exception of one-year market returns with a p-value of 0.051, slightly above the significance level of 0.05.

The SOCSCORE variable experiences difficulties selecting losers. However, it has more success selecting winners. Investors are advised against taking long positions in SOCSCORE stocks in general. Investors are further advised against taking short positions based on SOSCORE as no sub group is able to display significant negative returns.

Table 39a: aEESG High Book-to-Market Firms

One-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	-0.050	-0.836	-0.256	0.023	0.220	0.513	0.530	2,071
aEESG								
0-10	-0.192	-0.528	-0.379	-0.192	-0.005	0.145	0.500	2
11-20	0.027	-0.832	-0.148	0.125	0.284	0.588	0.581	43
21-30	-0.080	-1.029	-0.321	-0.029	0.231	0.539	0.481	210
31-40	-0.103	-1.149	-0.305	0.006	0.198	0.517	0.507	373
41-50	-0.049	-0.750	-0.301	0.038	0.227	0.489	0.530	334
51-60	-0.057	-0.789	-0.298	-0.017	0.226	0.541	0.479	282
61-70	-0.036	-0.874	-0.230	0.060	0.210	0.496	0.567	252
71-80	-0.044	-0.765	-0.248	0.023	0.204	0.505	0.531	226
81-90	-0.001	-0.651	-0.161	0.052	0.213	0.416	0.589	253
91-100	0.035	-0.641	-0.144	0.052	0.255	0.502	0.604	96
Low Score (0-20)	0.017	-0.819	-0.158	0.111	0.271	0.568	0.578	45
High Score (81-100)	0.009	-0.648	-0.156	0.052	0.224	0.439	0.593	349
High-Low	-0.008	0.171	0.002	-0.059	-0.046	-0.129		394
High-All	0.058	0.188	0.100	0.030	0.004	-0.074		
High-Index	-0.081	-0.069	-0.078	-0.077	-0.072	-0.177		

Resampling Result	Mean	5%	25%	Median	75%	95%		
aEESG								
Pseudo Low Mean	-0.052	-0.800	-0.253	0.020	0.209	0.480		
Pseudo Low	845	416	831	936	883	854		
(p-Value)	0.845	0.416	0.831	0.936	0.883	0.854		
Pseudo High Mean	-0.049	-0.836	-0.259	0.024	0.218	0.509		
Pseudo High	2	3	1	78	380	978		
(p-Value)	0.002	0.003	0.001	0.078	0.380	0.978		
Pseudo High-Low Mean	0.003	-0.035	-0.006	0.004	0.009	0.028		
Pseudo High-Low	559	150	442	830	847	928		
(p-Value)	0.559	0.150	0.442	0.830	0.847	0.928		
Pseudo High-All Mean	0.000	0.000	-0.003	0.002	-0.002	-0.004		
Pseudo High-All	2	3	1	78	380	978		
(p-Value)	0.002	0.003	0.001	0.078	0.380	0.978		
Pseudo High-Index Mean	0.031	-0.767	-0.181	0.101	0.290	0.686		
Pseudo High-Index	1000	0	1	1000	1000	1000		
(p-Value)	1.000	0.000	0.001	1.000	1.000	1.000		

Table 39b: aEESG High Book-to-Market Firms

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	-0.080	-0.697	-0.242	-0.046	0.120	0.398	0.432	2,071
aEESG								
0-10	-0.263	-0.408	-0.344	-0.263	-0.183	-0.119	0.000	2
11-20	0.002	-0.662	-0.157	0.102	0.211	0.403	0.628	43
21-30	-0.101	-0.868	-0.278	-0.063	0.119	0.477	0.429	210
31-40	-0.128	-1.049	-0.285	-0.051	0.116	0.387	0.429	373
41-50	-0.071	-0.666	-0.241	-0.048	0.116	0.424	0.419	334
51-60	-0.073	-0.573	-0.272	-0.062	0.126	0.406	0.418	282
61-70	-0.081	-0.663	-0.241	-0.044	0.115	0.403	0.452	252
71-80	-0.063	-0.541	-0.204	-0.044	0.108	0.319	0.394	226
81-90	-0.061	-0.521	-0.190	-0.026	0.095	0.301	0.451	253
91-100	-0.024	-0.467	-0.181	-0.068	0.204	0.397	0.438	96
Low Score (0-20)	-0.009	-0.651	-0.166	0.086	0.194	0.380	0.600	45
High Score (81-100)	-0.051	-0.506	-0.188	-0.037	0.125	0.328	0.447	349
High-Low	-0.042	0.145	-0.022	-0.123	-0.069	-0.052		394
High-All	0.029	0.191	0.054	0.008	0.004	-0.071		
High-Index	-0.055	0.005	-0.040	-0.051	-0.048	-0.154		

Resampling Result	Mean	5%	25%	Median	75%	95%		
aEESG								
Pseudo Low Mean	-0.079	-0.654	-0.236	-0.047	0.117	0.376		
Pseudo Low	921	423	869	998	926	582		
(p-Value)	0.921	0.423	0.869	0.998	0.926	0.582		
Pseudo High Mean	-0.080	-0.687	-0.240	-0.047	0.118	0.396		
Pseudo High	43	1	15	292	321	978		
(p-Value)	0.043	0.001	0.015	0.292	0.321	0.978		
Pseudo High-Low Mean	-0.001	-0.033	-0.003	0.001	0.001	0.020		
Pseudo High-Low	773	177	595	994	895	779		
(p-Value)	0.773	0.177	0.595	0.994	0.895	0.779		
Pseudo High-All Mean	0.000	0.010	0.002	-0.001	-0.002	-0.002		
Pseudo High-All	43	1	15	292	321	978		
(p-Value)	0.043	0.001	0.015	0.292	0.321	0.978		
Pseudo High-Index Mean	-0.026	-0.692	-0.200	0.005	0.166	0.550		
Pseudo High-Index	937	0	0	999	1000	1000		
(p-Value)	0.937	0.000	0.000	0.999	1.000	1.000		

Table 39c: aEESG High Book-to-Market Firms

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.067	-0.812	-0.193	0.121	0.378	0.794	0.620	2,071
aEESG								
0-10	0.348	-0.041	0.132	0.348	0.564	0.737	0.500	2
11-20	0.216	-0.571	-0.101	0.307	0.482	0.819	0.721	43
21-30	0.044	-0.863	-0.274	0.119	0.434	0.858	0.605	210
31-40	0.025	-0.942	-0.248	0.100	0.338	0.821	0.590	373
41-50	0.036	-0.920	-0.224	0.109	0.372	0.757	0.614	334
51-60	0.055	-0.796	-0.172	0.104	0.360	0.680	0.599	282
61-70	0.086	-0.841	-0.205	0.109	0.382	0.847	0.623	252
71-80	0.088	-0.681	-0.169	0.120	0.358	0.738	0.606	226
81-90	0.095	-0.641	-0.132	0.143	0.372	0.713	0.668	253
91-100	0.173	-0.490	-0.016	0.212	0.409	0.792	0.719	96
Low Score (0-20)	0.222	-0.548	-0.091	0.309	0.485	0.815	0.711	45
High Score (81-100)	0.117	-0.599	-0.100	0.162	0.382	0.735	0.682	349
High-Low	-0.105	-0.051	-0.010	-0.147	-0.103	-0.080		394
High-All	0.050	0.213	0.092	0.041	0.004	-0.059		
High-Index	-0.071	0.038	-0.054	-0.062	-0.085	-0.160		

Resampling Result	Mean	5%	25%	Median	75%	95%
aEESG						
Pseudo Low Mean	0.067	-0.759	-0.183	0.122	0.369	0.742
Pseudo Low	976	819	795	996	925	718
(p-Value)	0.976	0.819	0.795	0.996	0.925	0.718
Pseudo High Mean	0.066	-0.821	-0.193	0.123	0.377	0.784
Pseudo High	23	2	6	69	412	832
(p-Value)	0.023	0.002	0.006	0.069	0.412	0.832
Pseudo High-Low Mean	-0.001	-0.062	-0.011	0.002	0.008	0.042
Pseudo High-Low	898	458	498	978	917	812
(p-Value)	0.898	0.458	0.498	0.978	0.917	0.812
Pseudo High-All Mean	0.000	-0.009	-0.001	0.002	-0.001	-0.010
Pseudo High-All	23	2	6	69	412	832
(p-Value)	0.023	0.002	0.006	0.069	0.412	0.832
Pseudo High-Index Mean	0.137	-0.859	-0.139	0.185	0.462	0.944
Pseudo High-Index	1000	0	7	1000	1000	1000
(p-Value)	1.000	0.000	0.007	1.000	1.000	1.000

Table 39d: aEESG High Book-to-Market Firms

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	-0.064	-0.841	-0.274	-0.018	0.193	0.591	0.477	2,071
aEESG								
0-10	0.086	-0.117	-0.027	0.086	0.199	0.290	0.500	2
11-20	0.097	-0.464	-0.224	0.170	0.386	0.581	0.628	43
21-30	-0.084	-0.970	-0.335	-0.055	0.255	0.674	0.457	210
31-40	-0.114	-0.952	-0.352	-0.049	0.184	0.586	0.450	373
41-50	-0.080	-0.770	-0.278	-0.023	0.199	0.593	0.461	334
51-60	-0.069	-0.756	-0.294	-0.014	0.183	0.553	0.472	282
61-70	-0.055	-0.840	-0.274	-0.022	0.178	0.575	0.480	252
71-80	-0.013	-0.607	-0.209	0.022	0.186	0.487	0.522	226
81-90	-0.057	-0.708	-0.211	-0.012	0.144	0.459	0.474	253
91-100	0.003	-0.663	-0.202	0.018	0.216	0.636	0.521	96
Low Score (0-20)	0.096	-0.448	-0.215	0.166	0.378	0.568	0.622	45
High Score (81-100)	-0.041	-0.695	-0.209	-0.004	0.163	0.507	0.487	349
High-Low	-0.137	-0.247	0.007	-0.170	-0.215	-0.061		394
High-All	0.023	0.146	0.065	0.014	-0.029	-0.083		
High-Index	-0.052	0.004	-0.021	-0.038	-0.076	-0.148		

Resampling Result	Mean	5%	25%	Median	75%	95%		
aEESG								
Pseudo Low Mean	-0.065	-0.788	-0.265	-0.021	0.187	0.554		
Pseudo Low	996	967	691	1000	998	563		
(p-Value)	0.996	0.967	0.691	1.000	0.998	0.563		
Pseudo High Mean	-0.063	-0.822	-0.269	-0.018	0.193	0.590		
Pseudo High	154	30	17	284	889	949		
(p-Value)	0.154	0.030	0.017	0.284	0.889	0.949		
Pseudo High-Low Mean	0.002	-0.034	-0.004	0.003	0.006	0.036		
Pseudo High-Low	977	812	438	997	997	747		
(p-Value)	0.977	0.812	0.438	0.997	0.997	0.747		
Pseudo High-All Mean	0.001	0.018	0.004	0.000	0.000	-0.001		
Pseudo High-All	154	30	17	284	889	949		
(p-Value)	0.154	0.030	0.017	0.284	0.889	0.949		
Pseudo High-Index Mean	-0.011	-0.827	-0.249	0.020	0.269	0.737		
Pseudo High-Index	964	0	0	992	1000	1000		
(p-Value)	0.964	0.000	0.000	0.992	1.000	1.000		

Table 40a: aESG High Book-to-Market Firms

One-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	-0.050	-0.836	-0.256	0.023	0.220	0.513	0.530	2,071
aESG								
0-10	-0.436	-0.803	-0.611	-0.372	-0.229	-0.114	0.000	3
11-20	0.040	-0.656	-0.153	0.140	0.284	0.593	0.614	44
21-30	-0.055	-0.892	-0.318	-0.009	0.247	0.565	0.495	190
31-40	-0.049	-0.834	-0.229	0.022	0.230	0.508	0.526	443
41-50	-0.139	-1.106	-0.402	-0.021	0.172	0.447	0.479	286
51-60	-0.006	-0.771	-0.254	0.063	0.234	0.540	0.554	249
61-70	-0.078	-0.776	-0.290	0.001	0.179	0.553	0.507	211
71-80	-0.018	-0.617	-0.197	0.025	0.212	0.520	0.538	212
81-90	-0.043	-0.829	-0.225	0.048	0.202	0.425	0.564	305
91-100	0.029	-0.646	-0.172	0.052	0.255	0.506	0.594	128
Low Score (0-20)	0.010	-0.665	-0.182	0.108	0.252	0.548	0.574	47
High Score (81-100)	-0.022	-0.775	-0.210	0.050	0.218	0.449	0.573	433
High-Low	-0.031	-0.110	-0.027	-0.058	-0.034	-0.100		480
High-All	0.028	0.061	0.046	0.027	-0.003	-0.064		
High-Index	-0.111	-0.196	-0.131	-0.079	-0.078	-0.168		

Resampling Result	Mean	5%	25%	Median	75%	95%		
aESG								
Pseudo Low Mean	-0.045	-0.791	-0.244	0.026	0.214	0.486		
Pseudo Low	807	730	736	919	797	787		
(p-Value)	0.807	0.730	0.736	0.919	0.797	0.787		
Pseudo High Mean	-0.050	-0.833	-0.258	0.023	0.218	0.507		
Pseudo High	76	170	32	65	515	970		
(p-Value)	0.076	0.170	0.032	0.065	0.515	0.970		
Pseudo High-Low Mean	-0.004	-0.042	-0.014	-0.003	0.003	0.022		
Pseudo High-Low	660	610	542	813	769	886		
(p-Value)	0.660	0.610	0.542	0.813	0.769	0.886		
Pseudo High-All Mean	0.000	0.003	-0.002	0.001	-0.003	-0.006		
Pseudo High-All	76	170	32	65	515	970		
(p-Value)	0.076	0.170	0.032	0.065	0.515	0.970		
Pseudo High-Index Mean	0.061	-0.637	-0.127	0.102	0.296	0.675		
Pseudo High-Index	1000	0	605	1000	1000	1000		
(p-Value)	1.000	0.000	0.605	1.000	1.000	1.000		

Table 40b: aESG High Book-to-Market Firms

One-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	-0.080	-0.697	-0.242	-0.046	0.120	0.398	0.432	2,071
aESG								
0-10	-0.508	-0.877	-0.687	-0.450	-0.300	-0.180	0.000	3
11-20	0.033	-0.639	-0.126	0.099	0.238	0.502	0.614	44
21-30	-0.098	-0.717	-0.290	-0.074	0.111	0.464	0.411	190
31-40	-0.075	-0.754	-0.229	-0.039	0.128	0.384	0.458	443
41-50	-0.139	-1.020	-0.298	-0.085	0.076	0.339	0.392	286
51-60	-0.045	-0.588	-0.210	-0.024	0.130	0.448	0.470	249
61-70	-0.115	-0.757	-0.290	-0.103	0.110	0.429	0.346	211
71-80	-0.040	-0.530	-0.190	-0.018	0.136	0.318	0.481	212
81-90	-0.090	-0.622	-0.231	-0.051	0.073	0.320	0.407	305
91-100	-0.026	-0.489	-0.194	-0.043	0.147	0.410	0.453	128
Low Score (0-20)	-0.002	-0.654	-0.162	0.064	0.203	0.458	0.574	47
High Score (81-100)	-0.071	-0.582	-0.220	-0.049	0.095	0.347	0.420	433
High-Low	-0.070	0.072	-0.058	-0.113	-0.108	-0.111		480
High-All	0.009	0.115	0.022	-0.003	-0.025	-0.052		
High-Index	-0.075	-0.071	-0.072	-0.063	-0.077	-0.135		

Resampling Result	Mean	5%	25%	Median	75%	95%		
aESG								
Pseudo Low Mean	-0.082	-0.659	-0.238	-0.049	0.115	0.376		
Pseudo Low	953	433	897	999	961	812		
(p-Value)	0.953	0.433	0.897	0.999	0.961	0.812		
Pseudo High Mean	-0.080	-0.688	-0.241	-0.046	0.119	0.398		
Pseudo High	297	42	164	615	950	944		
(p-Value)	0.297	0.042	0.164	0.615	0.950	0.944		
Pseudo High-Low Mean	0.002	-0.029	-0.003	0.002	0.004	0.022		
Pseudo High-Low	904	261	788	994	980	899		
(p-Value)	0.904	0.261	0.788	0.994	0.980	0.899		
Pseudo High-All Mean	0.000	0.009	0.001	-0.001	-0.002	-0.001		
Pseudo High-All	297	42	164	615	950	944		
(p-Value)	0.297	0.042	0.164	0.615	0.950	0.944		
Pseudo High-Index Mean	-0.005	-0.617	-0.169	0.016	0.196	0.532		
Pseudo High-Index	1000	0	0	1000	1000	1000		
(p-Value)	1.000	0.000	0.000	1.000	1.000	1.000		

Table 40c: aESG High Book-to-Market Firms

Two-Year Market Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	0.067	-0.812	-0.193	0.121	0.378	0.794	0.620	2,071
aESG								
0-10	-0.188	-1.071	-0.672	-0.173	0.303	0.683	0.333	3
11-20	0.259	-0.528	0.072	0.301	0.513	0.863	0.750	44
21-30	0.061	-0.790	-0.261	0.116	0.370	0.841	0.595	190
31-40	0.041	-0.911	-0.211	0.118	0.384	0.821	0.600	443
41-50	-0.004	-0.916	-0.281	0.073	0.322	0.736	0.591	286
51-60	0.112	-0.718	-0.156	0.156	0.368	0.706	0.659	249
61-70	0.016	-1.044	-0.228	0.079	0.366	0.831	0.573	211
71-80	0.094	-0.666	-0.205	0.092	0.400	0.749	0.613	212
81-90	0.085	-0.700	-0.143	0.149	0.356	0.697	0.639	305
91-100	0.168	-0.622	-0.020	0.197	0.436	0.799	0.727	128
Low Score (0-20)	0.230	-0.562	0.024	0.271	0.499	0.851	0.723	47
High Score (81-100)	0.110	-0.677	-0.107	0.163	0.379	0.727	0.665	433
High-Low	-0.120	-0.114	-0.131	-0.107	-0.120	-0.124		480
High-All	0.043	0.136	0.086	0.042	0.001	-0.067		
High-Index	-0.078	-0.039	-0.060	-0.061	-0.088	-0.168		

Resampling Result aESG	Mean	5%	25%	Median	75%	95%
Pseudo Low Mean	0.066	-0.781	-0.186	0.122	0.375	0.749
Pseudo Low	980	819	987	988	935	784
(p-Value)	0.980	0.819	0.987	0.988	0.935	0.784
Pseudo High Mean	0.066	-0.825	-0.193	0.123	0.377	0.791
Pseudo High	25	4	1	31	495	910
(p-Value)	0.025	0.004	0.001	0.031	0.495	0.910
Pseudo High-Low Mean	0.000	-0.044	-0.007	0.001	0.002	0.042
Pseudo High-Low	932	580	887	935	937	875
(p-Value)	0.932	0.580	0.887	0.935	0.937	0.875
Pseudo High-All Mean	0.000	-0.012	0.000	0.001	0.000	-0.003
Pseudo High-All	25	4	1	31	495	910
(p-Value)	0.025	0.004	0.001	0.031	0.495	0.910
Pseudo High-Index Mean	0.144	-0.785	-0.133	0.184	0.466	0.959
Pseudo High-Index	1000	0	8	1000	1000	1000
(p-Value)	1.000	0.000	0.008	1.000	1.000	1.000

Table 40d: aESG High Book-to-Market Firms

Two-Year Market Adjusted Returns	Mean	5%	25%	Median	75%	95%	% Positive	n
All Firms	-0.064	-0.841	-0.274	-0.018	0.193	0.591	0.477	2,071
aESG								
0-10	-0.206	-0.804	-0.601	-0.347	0.118	0.491	0.333	3
11-20	0.138	-0.404	-0.126	0.185	0.354	0.580	0.659	44
21-30	-0.096	-0.907	-0.377	-0.093	0.222	0.667	0.421	190
31-40	-0.084	-0.910	-0.299	-0.030	0.219	0.588	0.465	443
41-50	-0.116	-0.940	-0.362	-0.051	0.174	0.638	0.434	286
51-60	-0.025	-0.745	-0.198	0.011	0.175	0.499	0.526	249
61-70	-0.121	-0.989	-0.332	-0.080	0.187	0.641	0.422	211
71-80	0.003	-0.640	-0.222	0.027	0.230	0.603	0.524	212
81-90	-0.064	-0.811	-0.231	-0.006	0.144	0.487	0.485	305
91-100	0.004	-0.691	-0.193	0.021	0.230	0.605	0.539	128
Low Score (0-20)	0.116	-0.430	-0.156	0.151	0.339	0.574	0.638	47
High Score (81-100)	-0.044	-0.776	-0.220	0.002	0.169	0.522	0.501	433
High-Low	-0.160	-0.346	-0.064	-0.149	-0.170	-0.052		480
High-All	0.020	0.065	0.054	0.019	-0.024	-0.069		
High-Index	-0.055	-0.076	-0.032	-0.032	-0.070	-0.133		

Resampling Result	Mean	5%	25%	Median	75%	95%		
aESG								
Pseudo Low Mean	-0.064	-0.782	-0.267	-0.023	0.187	0.546		
Pseudo Low	999	984	921	999	984	615		
(p-Value)	0.999	0.984	0.921	0.999	0.984	0.615		
Pseudo High Mean	-0.065	-0.830	-0.273	-0.019	0.194	0.591		
Pseudo High	145	291	24	98	895	926		
(p-Value)	0.145	0.291	0.024	0.098	0.895	0.926		
Pseudo High-Low Mean	-0.001	-0.048	-0.005	0.003	0.007	0.046		
Pseudo High-Low	991	934	754	996	994	771		
(p-Value)	0.991	0.934	0.754	0.996	0.994	0.771		
Pseudo High-All Mean	-0.001	0.011	0.001	-0.002	0.001	0.001		
Pseudo High-All	145	291	24	98	895	926		
(p-Value)	0.145	0.291	0.024	0.098	0.895	0.926		
Pseudo High-Index Mean	-0.010	-0.754	-0.241	0.013	0.263	0.724		
Pseudo High-Index	983	0	0	985	1000	1000		
(p-Value)	0.983	0.000	0.000	0.985	1.000	1.000		

5.4.7. High BM: Average EESG and Average ESG

Of the 2,071 observations from 2002-2013 two firm years achieve an EESG between 0-10 and 43 a score between 11-20, totalling 45/2,071 or 2.2% of the index. ESG observations include three firms achieving 0-10 and 44 companies scoring in the range 11-20, totalling 47/2,071 or 2.3% of the index. The average low EESG firm earns its investors 1.7% (one-year return), -0.9% (one-year market adjusted return), 22.2% (two-year return) and 9.6% (two-year market adjusted return), average return rates in the period 2002-2013. Low ESG firms achieves a return of 1.0% (one-year return), -0.2% (one-year market adjusted return), 23.0% (two-year return) and 11.6% (two-year market adjusted return). Displaying above average returns, none of the empirical portfolios are able to significantly outperform random selection.

EESG score firms in the range of 81-90 total 253 and firms scoring between 91-100 96, totalling 349/2,071, or 16.9% of the segment. In the regards to ESG firms the number of companies in the range between 81-90 are 305 and firms scoring 91-100 128, totalling 433 or 20.9% of the index. High EESG firms create an average return of 0.9% (one-year market return), -5.1% (one-year market adjusted return), 11.7% (two-year market return) and -4.1% (two-year market adjusted return), while high ESG firms deliver an average return of -2.2% (one-year market return), -7.1% (one-year market adjusted return), 11.0% (two-year market return) and -4.4% (two-year market adjusted return).

Significant aEESG scores are high score (81-100) and high-all for most rates of return except two-year market adjusted returns. For aESG scores high score (81-100) and high-all are significant for two-year market returns. The remaining variables show insignificant returns.

Last, in regards to the segment a summary including main results, winners and losers is presented for one-year market returns and one-year market adjusted returns.

Table 41: High BM: Summary FSCORE, EESG, Winners and Losers

Rank	Variable	Mean Return	n	Rank	Variable	Mean Return	n
	One-Year Market Return				**One-Year Market Adjusted Return**		
1	Low BM	0.179	2,141	1	Low BM	0.061	2,141
2	Middle BM	0.136	2,052	2	Middle BM	0.028	2,052
3	Index	0.089	6,264	3	Index	0.004	6,264
4	High BM	-0.050	2,071	4	High BM	-0.080	2,071
Low Score							
Rank	Variable	Mean Return	n	Rank	Variable	Mean Return	n
1	FSCORE	-0.543*	60	1	FSCORE	-0.488*	60
2	ECNSCORE	-0.164*	345	2	ECNSCORE	-0.163*	345
3	ENVSCORE	-0.077*	706	3	ENVSCORE	-0.094	706
4	SOCSCORE	-0.068	471	4	SOCSCORE	-0.083	471
5	CGVSCORE	-0.029	37	5	CGVSCORE	-0.043	37
6	aESG	0.010	47	6	aEESG	-0.009	45
7	aEESG	0.017	45	7	aESG	-0.002	47
High Score							
Rank	Variable	Mean Return	n	Rank	Variable	Mean Return	n
1	FSCORE	0.047*	230	1	FSCORE	-0.003*	230
2	aEESG	0.009*	349	2	ECNSCORE	-0.048*	465
3	ENVSCORE	-0.007*	462	3	aEESG	-0.051*	349
4	ECNSCORE	-0.009*	465	4	SOCSCORE	-0.054	386
5	SOCSCORE	-0.013*	386	5	ENVSCORE	-0.061	462
6	aESG	-0.022	433	6	aESG	-0.071	433
7	CGVSCORE	-0.054	925	7	CGVSCORE	-0.083	925
Losers							
Rank	Variable	Mean Return	n	Rank	Variable	Mean Return	n
1	FSCORE (1)	-0.544	12	1	FSCORE (1)	-0.587	12
2	FSCORE (2)	-0.543	48	2	aESG (0-10)	-0.508	3
3	aESG (0-10)	-0.436	3	3	FSCORE (2)	-0.464	48
4	FSCORE (3)	-0.235	126	4	aEESG (0-10)	-0.263	2
5	CGVSCORE (0-10)	-0.231	10	5	FSCORE (3)	-0.239	126
6	ECNSCORE (0-10)	-0.196	133	6	CGVSCORE (0-10)	-0.190	10
7	aEESG (0-10)	-0.192	2	7	ECNSCORE (0-10)	-0.181	133
Winners							
Rank	Variable	Mean Return	n	Rank	Variable	Mean Return	n
1	CGVSCORE (31-40)	0.088	42	1	aESG (11-20)	0.033	44
2	FSCORE (8)	0.065	193	2	CGVSCORE (11-20)	0.011	27
3	FSCORE (7)	0.047	406	3	FSCORE (8)	0.007	193
4	CGVSCORE (11-20)	0.045	27	4	CGVSCORE (31-40)	0.007	42
5	aESG (11-20)	0.040	44	5	aEESG (11-20)	0.002	43
6	aEESG (91-100)	0.035	96	6	CGVSCORE (21-30)	0.001	25
7	aESG (91-100)	0.029	128	7	FSCORE (7)	-0.004	406

* Significant result from resampling.

5.4.8. Summary: High Book-to-Market Firms

The high bm segment ranks fourth with an average one-year market return of -5.0% and one-year market adjusted return of -8.0% behind the index, middle bm and low bm returns.

Significant low score variables are FSCORE, ECNSCORE and ENVSCORE for one-year market returns and FSCORE and ECNSCORE for one-year market adjusted returns. The FSCORE variable is the best variable which displays significant negative returns for both one-year market returns and one-year market adjusted returns with a low to moderate sample size. Second, ECNSCORE shows significant negative mean returns with a moderate sample size of 345. Third, ENVSCORE yields significant negative one-year market returns with a large sample size of 706, For one-year market adjusted returns the environmental score shows negative, but insignificant returns.

Significant high score variables are FSCORE, aEESG and ECNSCORE for one-year market- and one-year market adjusted returns. In addition, ENVSCORE and SOCSCORE show significant returns. However, the variables with the exception of one-year market returns FSCORE and aEESG, yield negative returns. If exposure in the high bm segment of the LA4CTYUS index is required investors are advised to take long positions exclusively in positive return variables.

Investors are able to choose between multiple variables providing negative returns. The top seven losing variables belong to the lower end of FSCORE and EESG scores, according to theory. Among the winners a similar pattern found earlier in the other segments occur where CGVSCORE 31-40 and lower EESG primarily 11-20 dominate the list with high FSCORE firms.

6. Summary and Conclusions

By applying Joseph D. Piotroski's FSCORE to the LA4CTYUS CSR index this paper attempts to achieve excess returns by shorting low FSCORE and longing high FSCORE firms. In addition, EESG ratings are added to the strategy to examine EESG ratings' contribution to the strategy. The strategy is applied to the LA4CTYUS CSR index as a whole, low book-to-market, middle book-to-market and high book-to-market segments.

For the LA4CTYUS CSR index low FSCORE firms yield significant negative returns of -24.0% and -27.6% for one-year market return and one-year market adjusted returns from 2002-2013. High FSCORE firms also yield significant positive returns of 15.0% and 5.7% respectively in the same period. The governmental csr variable range 31-40 shows returns of 15.9% and 7.6% for one-year returns and one-year market adjusted returns.

From the low book-to-market segment average EESG firms in the 0-10 range, the governmental csr score (31-40) and the environmental csr score (41-50) yields 45.8%, 28.2% and 26.0% one-year market returns and 29.6%, 17.4% and 12,6% one-year market adjusted returns.

In regards to the middle book-to-market segment aEESG (0-10)/aESG (0-10) and FSCORE (1) firms populate the losers bracket. Mid-range EESG variables fill the winners bracket.

Last, low FSCORE and ECNSCORE firms dominate the high book-to-market low score returns with significant negative returns of -54.3%, -48.8% for FSCORE one-year market return and one-year market adjusted return, and -16.4% and -16.3% for ECNSCORE respectively.

In terms of segment ranking the low bm yields on average 17.9% and 6.1%, middle bm 13.6% and 2.8%, the LA4CTYUS index 8.9% and 0.4%, and the high bm segment -5.0% and -8.0%

An investor can potentially earn high excess returns by shorting low FSCORE firms in the high book-to-market segment (-54.3% one-year market return) (-48.8% one-year market adjusted return) and longing average ESG/EESG firms in the 0-10 range, governmental csr firms (31-40) and environmental csr firms (41-50) (27.0% one-year market return) (14.5% one-year market adjusted returns), totalling 81.3% (one-year market returns) and 63.3% (one-year market adjusted returns). Adjusting for average segment returns the strategy yields 58.4% and 49.2% respectively.

7. Bibliography

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8. Appendices

8.1. Appendix I: Research Insight Definitions collected from Research Insight ©

FSCORE	Name of Variable	Research Insight Expression	Definition
Market Value of Equity (MVE)	Market Value of Equity	MKVALF	**Units** Millions of dollars This concept returns the market value as of the company's fiscal year end. Note: MKVAL and MKVALM are both monthly market calculations, but MKVAL uses CSHOQ and MKVALM uses CSHOC. It is because two different data items are used between the two market value calculations that there could potentially be different values reported. For example, if a company has multiple issues of common stock, there can be a difference in the value obtained by these calculations. If an issue isn't actively traded daily, that issue's outstanding shares will not be included in the CSHOC value. If only the Cl A issue is actively traded, the value for CSHOC will reflect the Cl A issue only. By contrast, CSHOQ will include the sum of all outstanding common stock whether it is actively traded or not. In this case, MKVAL will differ from MKVALM. However, if the company actively trades both Cl A and Cl B, CSHOC will include both values, in which case, MKVAL and MKVALM will have the same value.
Book-to-Market-Ratio (Book-to-Market-ratio)	Book-to-Market-ratio	(AT-LT)	**Units** Percentage Please see AT and LT.
Total Assets (TA)	Asset-Total	AT	**Units** Millions of dollars This item represents current assets plus net property, plant, and equipment plus other noncurrent assets (including intangible assets, deferred items and investments and advances). Total liabilities and stockholders' equity represents current liabilities plus long-term debt plus other long-term liabilities plus stockholders' equity

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	Liabilities - Total	LT	**Units** Millions
			
			U.S. GAAP and Canadian IFRS Definition (Canadian GAAP Prior to January 1, 2011)
			
			This item represents current liabilities plus long-term debt plus other noncurrent liabilities, including deferred taxes and investment tax credit.
			
			This item is a component of Assets – Total/Liabilities and Shareholders' Equity – Total (LSE).
			
			This item is the sum of:
			
			Current Liabilities – Total (LCT)
			
			Deferred Taxes and Investment Tax Credit (TXDITC)
			
			Liabilities – Other (LO)
			
			Long-Term Debt – Total (DLTT)
			
			International Normalized Definition
			
			Financial Services Definition
			
			This item represents the total value of all items reported in the Liabilities section.
			
			This item is a component of Liabilities and Stockholders' Equity – Total.
			
			This item is the sum of:
			
			  1. Acceptances Outstanding
			  2. Accounts Payable/Creditors – Trade

			3. Deposits – Total – Banks 4. Deposits – Total – Customer 5. Foreign Exchange Liabilities 6. Liabilities – Other 7. Loans From Securities Finance Companies for Margin Transactions 8. Long-Term Debt – Total 9. Provisions – Total 10. Reinsurance Liabilities – Total 11. Reserves – Total (Insurance) 12. Reserves – Untaxed 13. Securities Borrowed and Deposited by Customers 14. Securities Sold Not Yet Purchased 15. Separate Account Liabilities 16. Debt in Current Liabilities – Total This item excludes: 1. Contingent liabilities reported supplementary to the Balance Sheet Minority interest, included in Minority Interest (Balance Sheet)
F1 Return on Assets (ROA)	Income Before Extraordinary Items	IB	**Units** Millions of dollars This item represents the income of a company after all expenses, including special items, income taxes, and minority interest - but before provisions for common and/or preferred dividends. This item does not reflect discontinued operations (appearing below taxes) or extraordinary items. This item includes (when reported below taxes): 1. Amortization of intangibles 2. Equity in earnings of unconsolidated subsidiaries 3. Gain or loss on the sale of securities when they are a regular part of a company's operations

			4. Shipping companies' operating differential subsidies (current and prior years)
			This item, for banks, includes net after-tax and after-minority interest profit or loss on securities sold or redeemed.
F2 Cash Flow from Operations (CFO)	Operating Activities - Net Cash Flow	OANCF	**Units** Millions of dollars This item represents the net change in cash from all items classified in the Operating Activities section on a Statement of Cash Flows (Format Code = 7). This item contains a Not Available data code (@NA) for companies reporting a Working Capital Statement (Format Code = 1), a Cash by Source and Use of Funds Statement (Format Code = 2), or a Cash Statement by Activity (Format Code = 3). This item includes changes in operating assets and liabilities. Increases in cash are presented as positive numbers. Decreases appear as negative numbers. This item is not available for banks.
F5 cLEV	Long-Term Debt Total	DLTT	**Units** Millions of dollars The item represents debt obligations due more than one year from the company's balance sheet date. This item includes 1. Purchase obligations and payments to officers (when listed as long-term liabilities) 2. Notes payable, due within one year and to be refunded by long-term debt when carried as a non-current liability 3. Long-term lease obligations (capitalized lease obligations) 4. Industrial revenue bonds 5. Advances to finance construction 6. Loans on insurance policies

			7. Indebtedness to affiliates 8. Bonds, mortgages, and similar debt 9. All obligations that require interest payments 10. Publishing companies' royalty contracts payable 11. Timber contracts for forestry and paper 12. Extractive industries' advances for exploration and development 13. Production payments and advances for exploration and development 14. Redeemable preferred stock and similar securities that the company is classifying as a liability under the guidelines of SFAS 150. This item excludes 1. Subsidiary preferred stock (included in *Minority Interest*) 2. The current portion of long-term debt (included in *Current Liabilities*) 3. Accounts payable due after one year (included in *Liabilities - Other*) 4. Accrued interest on long-term debt (included in *Liabilities - Other*) 5. Customers' deposits on bottles, kegs, and cases (included in *Liabilities - Other*) 6. Deferred compensation Long-term debt should be reported net of premium or discount. Standard and Poor's Compustat will collect the net figure.
F6 LIQ	Liquidity	ACT/LCT	Please see ACT and LCT
	Current Assets – Total	ACT	**Units** Millions of dollars This item represents cash and other assets that are expected to be realized in cash or used in the production of revenue within the next 12 months. This item is the sum of: 1. Cash and Short-Term Investments (CHE) 2. Receivables – Total (RECT) 3. Inventories – Total (INVT)

			4. Current Assets – Other – Total (ACO) This item includes 1. Planters' growing crops and advances when listed as current assets 2. Real estate companies' land purchase option deposits, land held for development and completed homes, and developed land for sale to customers when listed as current assets This item is not available for banks.
	Current Liabilities - Total	LCT	**Units** Millions of dollars This item represents all liabilities due within one year, including short-term debt and the current portion of long-term debt. This item is not available for banks.
F7 EQ	Common Shares Outstanding	CSHO	**Units** Millions This item represents the net number of all common shares outstanding at year end, excluding treasury shares and scrip. For foreign companies trading on a U.S. exchange, this item represents the number of American Depositary Receipts or American Depositary Shares. Common treasury shares carried on the asset side of the balance sheet are netted against the number of common shares issued. Common shares paid in stock dividends are included when the ex-dividend date falls within the year and the payment date the next year. Common Shares Outstanding will not be the same as Common Shares for Basic Earnings per Share when the company reports earnings per share based on average shares, when there has been a change in the shares over the year, when more than one class of common stock is outstanding or when the company reports earnings per share based on common stock equivalents.

			Common shares will be excluded when a company nets shares held by a consolidated subsidiary against the capital account.
F8 cMAR	Gross Profit Margin	GPM	**Units** Percentage This concept is Sales (Net) minus Cost of Goods Sold. This total is divided by Sales (Net) and multiplied by 100.
	Debt in Current Liabilities	DLC	**Units** Millions of dollars This item represents the total amount of short-term notes and the current portion of long-term debt, which is also stated as Notes Payable (NP) + Debt Due in 1st Year (DD1). This item includes 1. Bank acceptances and overdrafts 2. Loans payable to the officers of the company 3. Loans payable to stockholders 4. Loans payable to parents, and consolidated and unconsolidated subsidiaries 5. Notes payable to banks and others 6. Instalments on a loan 7. Sinking fund payments 8. Brokerage companies' drafts payable This item may include mortgage indebtedness for banks (included in *Current Liabilities - Other* if identifiable). This item excludes notes payable to subsidiaries (included in *Current Liabilities - Other*).
F9 cTURN	Sales (Net)	SALE/AT	**Units** Millions of dollars This item represents gross sales (the amount of actual billings to customers for regular sales completed during the period) reduced by cash discounts, trade discounts, and returned sales and allowances for which credit is given to customers.

			This item is scaled in millions. For example, the 1999 annual sales for GM is 173215.000 (or 173 billion, 215 million dollars).
			This item includes
			1. Any revenue source that is expected to continue for the life of the company 2. Other operating revenue 3. Installment sales 4. Franchise sales (when corresponding expenses are available)
			Special cases (by industry) include ...
			1. Royalty income when considered operating income (such as, oil companies, extractive industries, publishing companies, etc.) 2. Retail companies' sales of leased departments when corresponding costs are available and included in expenses (if costs are not available, the net figure is included in *Nonoperating Income [Expense]*) 3. Shipping companies' operating differential subsidies and income on reserve fund securities when shown separately 4. Finance companies' earned insurance premiums and interest income for finance companies, the sales are counted only after net losses on factored receivables purchased 5. Airline companies, net mutual aid assistance and federal subsidies 6. Cigar, cigarette, oil, rubber, and liquor companies' net sales are after deducting excise taxes 7. Income derived from equipment rental is considered part of operating revenue 8. Utilities' net sales are total current operating revenue 9. For banks, this item includes total current operating revenue and net pretax profit or loss on securities sold or redeemed 10. Life insurance, and property and casualty companies' net sales are total income 11. Advertising companies' net sales are commissions earned, not gross billings 12. Franchise operations' franchise and license fees 13. Leasing companies' rental or leased income

			14. Hospitals' sales net of provision for contractual allowances (will sometimes include doubtful accounts) 15. Security brokers' other income 16. Engineering, Hazardous Waste, etc. (collect net revenue instead of gross revenue when the difference is due to outside subcontractor cost) This item excludes 1. Nonoperating income 2. Interest income (included in *Nonoperating Income [Expense]*) 3. Equity in earnings of unconsolidated subsidiaries (included in *Nonoperating Income [Expense]*) 4. Other income (included in *Nonoperating Income [Expense]*) 5. Rental income (included in *Nonoperating Income [Expense]*) 6. Gain on sale of securities or fixed assets (included in *Special Items*) 7. Discontinued operations (included in *Special Items*) 8. Excise taxes (excluded from sales and also deducted from *Cost of Goods Sold*) 9. Royalty income (included in *Nonoperating Income [Expense]*) 10. Royalty income, net of expenses Other operating income, net

8.2. Appendix II: Datastream Definitions collected from Datastream©

Return Index

A return index (RI) is available for individual equities and unit trusts. This shows a theoretical growth in value of a share holding over a specified period, assuming that dividends are re-invested to purchase additional units of an equity or unit trust at the closing price applicable on the ex-dividend date.

For all countries except the USA and Canada detailed dividend payment data is only available on Datastream from 1988 onwards. Up to this time the RI is constructed using the annualised dividend yield. This method adds an increment of $1/260$th part of the dividend yield to the price each weekday. There are assumed to be 260 weekdays in a year, market holidays are ignored:

Method 1 (using annualised dividend yield)

RI on the basedate $=100$, then:

$$RI_t = RI_{t-1} * \frac{PI_t}{PI_{t-1}} * \left(1 + \frac{DY_t}{100} * \frac{1}{N}\right)$$

Where:

RI_t = return index on day t

RI_{t-1} = return index on previous day

PI_t = price index on day t

PI_{t-1} = price index on previous day

DY_t = dividend yield % on day t

N = number of working days in the year (taken to be 260)

From 1988 onwards (and from 1973 for US and Canadian stocks), the availability of detailed dividend payment data enables a more realistic method to be used in which the discrete quantity of dividend paid is added to the price on the ex-date of the payment. Then:

Method 2 (using ex-dividend date)

$$RI_t = RI_{t-1} * \frac{P_t}{P_{t-1}}$$

except when t = ex-date of the dividend payment D_t then:

$$RI_t = RI_{t-1} * \frac{P_t + D_t}{P_{t-1}}$$

Where:

P_t = price on ex-date

P_{t-1} = price on previous day

D_t = dividend payment associated with ex-date t

Gross dividends are used where available and the calculation ignores tax and re-investment charges. Adjusted closing prices are used throughout to determine price index and hence return index.

Note: where the detailed dividend payment data (after 1988 for countries other than US and Canada) contains a mixture of dividends marked as net and gross, the annualised dividend yield (method 1 above) continues to be used. The net/gross markers can be identified using the datatype DTAX (tax marker) or can be displayed in the Dividend Payment Report in DS Advance. To display the total return using the 'ex-date' method in these cases, the alternative total return datatype RZ (return index as paid) may be used. RZ uses the 'ex-date' method (method 2 above) irrespective of the tax markers.

For UK companies the RI includes a tax credit on the dividend until it was finally abolished in April 2004. Prior to that time dividends as announced by the company are grossed up to include to the credit in the RI calculation. The rate used varies over time, the last rate being 10% in the period April 1999 to April 2004. To see the version of return index which does not include these tax credits, the datatype RN can be used. The RN calculation is the same as RI except the dividends used are as announced by companies and not grossed up for the tax credits. It follows that since April 2004 the performance of RI and RN for UK companies is the same. RN is available for UK companies only.