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ESG-Ratings and Returns

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Master Thesis

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ABSTRACT

We find that value-weighted portfolios long US stocks from companies with low Environmental, Social and Governance (ESG)-ratings and short stocks with high ESG-ratings have returned annualized 5-factor alphas between 6.9% and 10.8% in the period of 2010 and 2018 depending on the choice of breakpoint. Through analysing holdings of institutional investors, we find that the difference in performance cannot be attributed to behavioral changes such as negative screening of low-rated ESG stocks or impact investing in high-rated ESG stocks.

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Contents

List of Abbreviations

AMEX American Stock Exchange

CRSP Center for Research in Security Prices

DJIA Dow Jones Industrial Average

ESG Environmental, Social and Governance

EW Equal-Weighted

IBES Institutional Brokers Estimate Systems

KFDL Kenneth French's Data Library

NYSE New York Stock Exchange

VW Value-Weighted

WRDS Wharton Research Data Services

List of Tables

List of Symbols

α Parameter for intercept in ESG Portfolios

β Factor loading in ESG Portfolios

r_f Parameter for risk-free returns

r_i Parameter for returns of stock i

r_{mkt} Parameter for market returns

$rESG_{low}$ Parameter for stock returns of low-rated ESG companies

$rESG_{high}$ Parameter for stock returns of high-rated ESG companies

$rCOMP_{low}$ Parameter for stock returns of comparable industries

ϵ Parameter for error term

a Parameter for intercept in Cross-sectional Regressions

b Coefficient for independent variable in Cross-sectional Regressions

c Parameter for intercept in Institutional Ownership Regressions

d Coefficient for independent variable in Institutional Ownership Regressions

T Parameter for number of time periods

ρ Parameter for correlation

N_g Parameter for within-cluster correlation

τ Parameter for Moulton errors

1 Introduction

ESG-investment has seen a recent explosion in fund allocation, quadrupling in size from $3 trillion to $12 trillion between 2010 and 2018 (USSIF (2018)). Even though total funds allocated to ESG investing has been trending sharply upwards, there is little evidence of ESG-based investment strategies causing abnormal, positive returns for investors. The Dow Jones Sustainability Index North America, a value-weighted index consisting of the top quantile ESG-rated companies out of the largest 600 companies in North America, has under-performed the S&P500 by 2%, and the Dow Jones Industrial Average (DJIA) by 0.7% on an annualized basis since 2010.[1] Even though many investors primarily use ESG information as a risk-assessment tool, some investment strategies are based on invoking behavioral changes in the corporate governance of companies through diverting investment away from irresponsible companies' stocks, popularly referred to as negative screening, and impact investing, which is to allocate more investment into stocks from companies that are considered positive for society.

Through our thesis we first investigate whether the under-performance of high-rated ESG stocks holds in general, using Fama and French's 5-factor model (2015) as our primary benchmark. We draw inspiration from previous results presented by Hong and Kaperczyk (2009), who used Merton's (1987) theories on neglected stocks and segmented markets to show that stocks from the alcohol-, tobacco-, and gambling-industries systematically outperformed a portfolio consisting of stocks from comparable industries with annualized 4-factor alphas of 3.7% between 1926 and 2006. Hong and Kaperczyk hypothesized that institutional investors like pension funds, universities, religious organizations, banks and insurance companies are subject to social norm pressure and therefore are likely to perform negative screening of 'sin' stocks, leading

[1] See DJIA North America Composite Index Ticker: A1SGI

to a synthetic downwards shift in demand compared to their 'non-sinful' counterparts, with the alternative explanation offered that the 'sin' effect simply is compensation for regulation risk. We investigate whether this effect can be extrapolated to the case of portfolios of stocks from companies with high and low ESG-ratings. Our investigations are based on the assumption that stocks from companies with low ESG-ratings should be subject to a decrease in demand due to social norms or increased regulation risk, leading to positive, abnormal returns. Conversely, stocks from companies with high ESG-ratings should under-perform due to increased investment allocation from socially responsible investors.

Our motivation to delve deeper into this topic stems from previous research having mixed evidence on investments strategies that are based on ESG-ratings, the topic of ESG-based investing being a relative new one, and the potential contribution towards better understanding of non-fundamental financial factors' impact in asset pricing. 2010 serves as a natural starting point for our analysis, not only because of the asset allocation boom, but because 2010 marks the year when our sample of ESG-ratings reaches 10% of total companies listed.

2 Literature Review

Most literature on ESG investing have hypothesized that ESG at its core is an intangible asset, to which investors under-react and therefore a long-term strategy of investing in high-rated ESG assets should yield abnormal returns unexplained by financial factors. Similar under-reaction phenomena that has shown results that cannot be explained by market efficiency theory include post-earnings announcement drift (Bernard and Thomas (1989)) and momentum strategies (Jegadeesh and Titman (1993)). Examples of undervaluation of intangibles include Chan, Lakonishok and Sougiannis (2001), who found that R&D and advertisement intensive firms earned abnormal returns from 1975 to

1995, and theorized that this may have been a result of accounting rules allowing these investments to be expensed rather than put on the balance sheet as an intangible asset. In a similar vein of research, Edmans (2011) found that companies with high employee satisfaction returned an annualized four-factor alpha of 3.5% between 1984 to 2009.

Other reasons for deviations in returns from investing using ESG-based strategies are theories of the downsides of active investing presented by Sharpe (1991), later coined as 'equilibrium accounting' by Fama and French (2007), who expanded the argument to look at asset prices when a subset of investors treat assets as consumption goods. According to Fama and French, traditional asset pricing models fails to explain behavioral differences that are not rooted in the risk-return relationship of assets and theorize that if a substantial group of investors invest based on non-financial factors, this may pivot the true tangency portfolio away from the market-portfolio and make prices become less rational. In a similar vein of research Merton (1987) argues that if certain firms are neglected by investors, these firms' stocks have a smaller investor base and will consequently be under-priced. While impact investing may cause an upwards pressure in demand and therefore increase returns, the opposite strategy of excluding companies exhibiting irresponsible behavior could also cause excess returns as a consequence of exogenous demand shifts, which may cause the stock to become undervalued based on fundamental financial factors. Pastor, Stambaugh & Taylor (2019) show that agents' tastes for 'green' assets affect prices and that agents are willing to pay more for stocks from firms with a green profile, thereby lowering the firms' costs of capital. They found that green assets have negative CAPM alphas, whereas brown assets have positive alphas and that agents who tilt their portfolios towards 'green' assets and away from 'brown' assets, earn lower expected returns.

Empirical evidence of how low demand creates excess returns includes Hong and Kaperczyk (2009), who used institutional investor behavior to show that

relatively lower demand for a portfolio of stocks from sinful industries, defined as companies from the tobacco-, alcohol- and gambling-industries, provided an annualized four-factor alpha of 3.7% from 1926 to 2006, relative to stocks from comparable industries.

An argument against the theory of negative demand shifts leading to increased returns is that other investors will tilt their portfolios in the opposite direction, expecting to earn quasi-arbitrage returns. Grossman and Stiglitz (1980), however, find that this strategy is too costly, and do not expect a fully offsetting effect. Shleifer (1997) theorize that one limit of arbitrage is that there may not be enough arbitrage capital available to offset large demand-shifts.

Literature on returns from ESG-investing in top financial journals is generally sparse. Hartzman and Sussman (2019) analyzed fund flows and found that net inflows in socially responsible funds equated to $24 billion compared to net outflows of $12 billion in low-responsible funds, in the 10 months following the launch of the *Morningstar Fund Sustainability Ranking* in 2016, but did not find any subsequent difference in fund performance. Bebchuk, Cohen and Wang (2013) investigated known correlation between governance indices and abnormal returns, and found that the abnormal returns disappeared at the turn of the millennium.

ESG-ratings are marketed as a way to screen investment, potentially invoking behaviorally based asset demand shocks. In the traditional finance paradigm, demand shocks are absorbed by arbitrageurs, who can use sophisticated trading strategies to ensure that assets remain close to their equilibrium price. Theoretical work by De Long et al. (1990) and Shleifer and Vishny (1997) show how perfect arbitrage can break down, and empirical studies of the price effects of SP&500 listings (Harris and Gurel (1986); Beneish and Whaley (1996); Lynch and Mendenhall (1997)) provide compelling evidence of the importance of such breakdowns for the prices of individual stocks.

3 Methodology and Hypotheses

We start by testing for abnormal returns of value-weighted zero investment and long portfolios of the highest/lowest 10% stocks from 2010 to 2018, using Fama and French's 5-factor model (2015) as our benchmark. ESG-ratings are posted in January, and are updated in regular intervals if new information becomes available. We choose to make the portfolio screening each June after publishing of the annual reports, holding the assets from July of year t to June of year $t+1$, with monthly rebalancing. We move on to tests correcting for cross-sectional correlation, using Fama and MacBeth's (1973) test to measure the performance of portfolios of ESG-stocks in the presence of a series of known return predictors. We then investigate whether institutional owners own less/more equity in companies that have low/high ESG-ratings. Following Hong and Kacperczyk (2009), we apply a pooled panel OLS-model, controlling for several variables that are known to affect institutional investor behavior and preferences. Lastly, we perform several robustness checks, including running equal-weighted portfolios, testing several portfolio breakpoints, changing the formation month, analyzing outlier influence on return performance by changing winsorization level and netting out announcement returns to see how the performance is affected by earnings surprises.

When investigating the data we compute both time-series averages of Pearson product-moment and non-parametric Spearman rank correlations for pairwise variables in all of our linear models. Pearson product-moment correlations are computed using data sets winsorized at the 0.5% level and Spearman rank correlations are computed using our raw data sets[2] . If the Spearman rank correlation is substantially larger than the Pearson product-moment correlation for a given pair of variables, this likely indicates that there is a monotonic, non-linear relation between those variables. In the case of the opposite rela-

[2]Spearman rank correlations ranks the observations relative to other observations and winsorization distorts the rankings. Therefore, we use the raw data with Spearman rank correlation calculations.

tionship, it likely indicates that there are some extreme data points that are exerting strong influence on the calculations and that further winsorization is needed (Bali et al. (2016)). In general, with the exception of our time-series factor-regression, we do not worry too much about multicollinearity between our independent variables, since it does not distort the interpretation of our variables of interest. We limit ourselves to commenting on the lack of interpretability of coefficients for the correlated independent variables when deemed necessary.

In general, we take the logarithm of any variable if in our data inspection we recognise a significant improvement in reducing heteroskedasticity and non-normality of the residuals through visual inspection of bivariate plots.

3.1 ESG-Ratings and Returns

Empirical asset pricing often deals with portfolios of stocks rather than individual shares when explaining stock returns. In the literature, two main portfolio versions are used. The first is the Value-Weighted (VW) portfolio where all stocks are weighted according to their market capitalization at the time of portfolio formation. The return of a value-weighted portfolio p for month t is the sum of the weighted return of all portfolio assets N, re-balanced on market capitalization each month from July of year t to June of year $t+1$. Value-weighted portfolios put larger emphasis on the large market capitalization stocks in the portfolio. The Equal-Weighted (EW) portfolio gives every stock the same weight regardless of their market capitalization. These weighting strategies have very different risk strategies and practical implications. Equal-weighted portfolios tend to be riskier as they tend to put a heavier emphasis on low-priced growth stocks. Additionally, value-weighted portfolios are more tax efficient, since re-balancing of an equal-weighted portfolio always entails selling the best performing stocks in the portfolio. We will therefore

apply value-weighted portfolios for the analysis, but will run equal-weighted portfolios as a robustness check.

3.1.1 ESG Portfolios

To analyze whether there is a relationship between ESG-ratings and risk-adjusted returns, we construct a theoretical portfolio long the 10% companies with the lowest ESG-ratings in year t and short the 10% companies with the highest ESG-ratings in year t. We estimate the following model:

$$r_{ESG_{low,t}} - r_{ESG_{high,t}} = \hat{\alpha}_0 + \hat{\beta}_{mkt}(r_{mkt,t} - r_{f,t}) + \hat{\beta}_{SMB} r_{SMB,t} + \hat{\beta}_{HML} r_{HML,t} + \hat{\beta}_{RMW} r_{RMW,t} + \hat{\beta}_{CMA} r_{CMA,t} + \hat{\epsilon}_t, \qquad t = 1, ..., T \tag{1}$$

in addition to the long portfolio:

$$r_{ESG_{low,t}} - r_{f,t} = \hat{\alpha}_0 + \hat{\beta}_{mkt}(r_{mkt,t} - r_{f,t}) + \hat{\beta}_{SMB} r_{SMB,t} + \hat{\beta}_{HML} r_{HML,t} + \hat{\beta}_{RMW} r_{RMW,t} + \hat{\beta}_{CMA} r_{CMA,t} + \hat{\epsilon}_t, \qquad t = 1, ..., T \tag{2}$$

We also run the same long portfolio with high-rated ESG companies. $r_{ESG_{low,t}}$ is the the return of a portfolio of companies with low ESG-ratings in month t, $r_{ESG_{high,t}}$ is a portfolio of companies with high ESG-ratings in month t and $r_{f,t}$ is the risk-free rate in month t. For brevity, we use the 10% level as our primary breakpoint, while also running a smaller sample of tests for percentile breakpoints 2.5%, 5% and 20% as robustness checks. We run portfolios with other breakpoints to address any concerns of our results stemming from an arbitrary percentile cutoff and to analyze the effects of changing portfolio breakpoints. If there is a relationship between ESG-ratings and returns, we would expect to see larger alpha coefficients when we decrease the portfolio breakpoint to only include the best- and worst-performing stocks and a smaller alpha coefficient when when we expand the portfolio to include more stocks that lean towards a 'neutral' rating.

Our benchmark model consists of the factors included in Fama and French's (2015) 5-factor model, which is built upon the more famous Fama and French (1993) 3-factor model. The excess return on the market is denoted as MKT; the excess returns of small companies over big companies is denoted as SMB and the excess returns of high book-to-market stocks over small book-to-market stocks is denoted as HML. The two newly added factors are RMW, defined as the excess returns of highly profitable companies versus low profitability companies and CMA, defined as the excess returns of firms that invest conservatively versus the firms that invest aggressively. In addition, we use the momentum-factor MOM in robustness checks, which is a fourth factor added by Carhart (1997) to Fama and French's original 3-factors, a variable designed to capture the excess returns of stocks the top-performing stocks from the last 12 months over the returns from low-performing stocks. Our main coefficient of interest is the intercept α representing the excess return of the portfolios. We calculate our standard errors using Newey and West's (1987) autocorrelation and heteroskedasticity robust standard errors with $4(T/100)^{2/9}$ lags.[3]

3.1.2 Hypothesis 1

We hypothesize that returns for zero investment portfolios long stocks with low ESG-ratings and short stocks with high-ESG ratings should be significantly different from zero. Formally, the hypothesis is:

$$H_0\text{: } \alpha_0 = 0$$

$$H_1\text{: } \alpha_0 \neq 0$$

[3]Newey and West (1994) argue that the choice of lag length is arbitrary. We, nevertheless, choose our lag length based on the Bartlett's kernel-specification of the given formula, which is widely used in econometric applications.

3.1.3 Cross-Sectional Regressions

We compare our results from the time-series regressions by running regressions based on the methodology created by Fama and MacBeth (1973), which aims to quantify the average reward for factor exposure. Unlike portfolio analysis, the Fama-Macbeth analysis allows us to control for a large set of other variables when examining the relation of interest. As the first step, we run monthly cross-sectional regressions for each month in our sample. This gives us slope coefficients on each independent variable for each period along with the associated standard errors for each month. To calculate the coefficients we take the means of the time-series coefficients. Fama and MacBeth then suggests that one should use the standard deviation of the cross-sectional regression estimates to generate the sampling errors for these estimates, but this approach has been widely criticized (e.g. by Cochrane (2009)), because we only have one sample mean for each cross-sectional regression, which ignores the cross-sectional estimation errors. An alternate approach, offered by Cuthbertson (2004) is, instead of taking the standard errors of the sample mean, to take the mean of the standard errors. We will be using the latter in our calculations. Formally, we estimate:

$$\begin{aligned} r_{i,t} - r_{f,t} = \hat{a}_0 + \hat{b}_1 ESGDUM_{low,t-1} + \hat{b}_2 LOGSIZE1_{i,t-1} + \hat{b}_3 BETA1_{i,t-1} + \\ \hat{b}_4 LOGMB1_{i,t-1} + \hat{b}_5 RETADJ1_{i,t-1} + \hat{b}_6 AVGMRET1_{i,t-1} + \\ \hat{b}_7 LOGTURN1_{i,t-1} + \hat{b}_8 LOGAGE_{i,t-1} + \hat{b}_9 BLEV1_{i,t-1} + \hat{\epsilon}_{i,t}, \\ t = 1, ..., T, \qquad i = 1, ..., N \end{aligned} \tag{3}$$

where $r_{i,t} - r_{f,t}$ is the excess return on asset i at time t, b_1 is our coefficient of interest, where $ESGDUM_{low,t-1}$ is a dummy variable, which equals one if the company had an ESG-rating among the bottom 10% in month $t-1$, based on scores from July of year t to June of year $t+1$, and zero otherwise. We

run the same specification for the high-rated ESG portfolio as well. All of our independent variables are lagged by one month and consist of a series of variables that have been found to be predictors of abnormal returns. If the Efficient Market Hypothesis (Fama (1970)) holds, then all of our independent variables should be statistically indistinguishable from zero. An explanatory list of variables, including its technical construction and article source can be found in Appendix A.

3.1.4 Hypothesis 2

We hypothesize that dummy coefficients of portfolios consisting of companies with low or high ESG-scores are significantly different from zero when controlling for the presence of a series of known return predictors. Formally, the hypothesis is:

$$H_0\text{: } b_1 = 0$$

$$H_1\text{: } b_1 \neq 0$$

3.2 Institutional Ownership Regressions

To empirically test whether institutions such as pension funds, universities, religious organizations, banks, and insurance companies perform impact investing or negative screening, we develop a model based on methodology from Hong and Kacperczyk (2009). We estimate several permutations of the following panel OLS regression:

$$
\begin{aligned}
IO_{i,t} = \hat{c}_0 + \hat{d}_1 ESGDUM_{i,t} + \hat{d}_2 LOGSIZE_{i,t} + \hat{d}_3 BETA_{i,t} + \hat{d}_4 LOGMB_{i,t} + \\
\hat{d}_5 LOGYIELD_{i,t} + \hat{d}_6 LOGAGE_{i,t} + \hat{d}_7 LOGPRINV_{i,t} + \\
\hat{d}_8 LOGSTDRET_{i,t} + \hat{d}_9 AVGMRET_{i,t} + \hat{d}_{10} LOGBB_{i,t} + \\
\hat{d}_{11} LOGTURN_{i,t} + \hat{d}_{12} NASDAQ_{i,t} + \hat{d}_{13} S\&P500_{i,t} + \hat{\epsilon}_{i,t}, \\
i = 1, ..., N
\end{aligned}
\tag{4}
$$

where $IO_{i,t}$ is the percentage of ownership for company i at time t and d_1 is our coefficient of interest which measures whether stocks in pre-defined low/high-ESG rated portfolios have different level of ownership than other stocks. Our other control variables are based on extensive research of institutional investor behavior and aim to control for a complete set of factors that explain institutional investors' investment patterns. These control variables can broadly be divided into four different categories, where institutional investors according to literature have preferences based on liquidity and transaction cost motives, prefer less volatility, stocks that are predicted to do well given known return anomalies and stocks with different payout structures. Our main purpose is to soak up as much of the cross-sectional variation as possible so that the regression results purely reflect the difference in ownership for our variable of interest. An explanatory list of variables, including its technical construction and article source can be found in Appendix A.

To address the concern of regression standard errors, conditional on the independent variables, are clustered within groups of industries, we use Moulton's clustered standard errors (1986) on Fama and French's 48-industries (1997), following Hong and Kacperczyk (2009). If standard errors are clustered among industries, this causes a loss in the precision of the estimators, and Moulton show that one can correct these estimates by imposing an inflation term on the standard errors given by:

$$\tau_j \simeq 1 + \rho_{xj}\rho_u \left(\left(\frac{V[N_g]}{\overline{N}_g} \right) + \overline{N}_g - 1 \right) \tag{5}$$

where ρ_{xj} is a measure of the within-cluster correlation of x_j, ρ_u is the within cluster error-correlation, N_g is the correlation of cluster g and $\overline{N}_g$ is the average cluster size.

3.2.1 Hypothesis 3

We expect that institutional investors, on average, reacts to ESG-ratings and invests significantly more or less in stocks with high or low ESG-ratings and hypothesize:

$$H_0\text{: } d_1 = 0$$
$$H_1\text{: } d_1 \neq 0$$

4 Data

This section is divided into three parts. We first describe the databases and merging procedures, then describe our screening and cleaning methodology. The last part is a brief description of descriptive statistics and correlations for our data sets.

4.1 Databases and Merging

We get market data from the Center for Research in Security Prices (CRSP) and fundamental accounting data from COMPUSTAT. We apply CRSP's *permno* as our primary security identifier. To match the two databases we use the CRSP/COMPUSTAT merged database. We get data for institutional ownership from Thompson Reuters' 13-F database. The ESG-scores are retrieved from Refinitiv Eikon, but the database share no common identifier with CRSP or COMPUSTAT data, so we perform several name and ticker string matching techniques along with manual matching to link the data via

the *cusip*-identifiers of Institutional Brokers Estimate Systems (IBES), which serves as a bridge between Refinitiv and CRSP[4] . To get accurate daily data for S&P500 listings we use COMPUSTAT's Index Constituents database. The data for dividend yield has been retreieved from WRDS' Financial Ratios Suite.

4.2 Data Screening and Cleaning

We employ similar screening procedures to those of Fama and French (1992). We exclude financial firms, defined as those starting with a one-digit sic code of 6, because the leverage level is incomparable with companies from other industries. We also exclude companies in July of year t if it is missing a stock price in CRSP for either December of year $t-1$ or from June of year t. Companies missing monthly returns data for more than 36 out of the last 60 months are also excluded along with firms with missing or negative book equity values in COMPUSTAT. We only analyze assets classified as common stocks (CRSP *shrcd* must be 10 or 11) and shares must be listed on the New York Stock Exchange (NYSE), NASDAQ or the American Stock Exchange (AMEX) (CRSP *exchcd*-variable must be 1, 2 or 3). All daily and monthly returns are adjusted using data from the *CRSP Stock Events - Delisting Information*-database. This database takes into account realized returns for investors who held firms during events such as bankruptcies or takeovers, where this was not reflected in the listed stock price.[5] Whenever we take the logarithm of a variable with a portion of logically explainable zero-values we add a constant to all variables in our sample to not erroneously discard valid observations. We winsorize all data on the 0.5% level, with the exception of data retrieved from Kenneth French's Data Library (KFDL).

[4]Code for linking CRSP and IBES with Python along with several open source code sections that we've used as inspiration is available at WRDS: https://wrds-www.wharton.upenn.edu/pages/support/applications/python-replications/

[5]The CRSP-Delisting database has been accused of inaccuracies and incomplete data (Shumway (1997)), but besides pointing this out here, we do not address this further in our analysis.

4.3 Descriptive Statistics and Correlations

We here report the descriptive statistics and correlations from the period spanning from 2010 to 2018 for the value-weighted zero investment and two long portfolios along with the Fama and French's 5 factors (2015). Both the median and mean returns for the zero investment portfolio are positive, indicating that the portfolio of low-rated ESG stocks have outperformed high-rated ESG-stocks, before adjusting for risk. The long portfolios show that the standard deviation is lower for the low-rated portfolio, which means that the value-weighted long portfolio of companies with low ESG-ratings also returned a higher Sharpe Ratio in the period. Correlations reveal that the zero investment portfolio shows low to moderate positive correlation with the long low-ESG portfolio and is similarly negatively correlated with the high-ESG portfolio. The long portfolios both show moderate to high correlation with the market factor. Descriptive statistics and correlations for our different regression data sets are reported in Appendix E. One significant point of note is that the mean holdings of institutional investors rose from 39.1% in the sample running from 1980 to 2018, while our sample of interest saw it increase to 61.6%. This implies that institutional investors have become an increasingly dominant investor class over the past decade.

Table 1: Descriptive Statistics and Correlations Time-Series Regressions 2010-2018

This table reports descriptive statistics and correlations for the time-series factor regressions from July of 2010 throughout 2018. We report the total number of observations (N), the minimum value (Min), the 5^{th} percentile (5^{th}), the 25^{th} percentile (25^{th}), the median (Median), the 75^{th} percentile (75^{th}), the 95^{th} percentile (95^{th}), the maximum value (Max), the standard deviation (Std), the skew (Skew) and the excess kurtosis (Kurt). The top half of the table reports descriptive statistics for our main portfolios of interest and the Fama-French 5-factors. The lower half of the table reports averages of the annual cross-sectional Pearson product-moment and Spearman rank-correlations between pairs of factors. Below-diagonal entries present the average Pearson product-moment correlations. Above diagonal entries present the average Spearman rank correlation. $ESG_{low} - ESG_{high}$ is a value-weighted zero investment portfolio long the 10% highest rated ESG-stocks and short the highest rated ESG-stocks. $ESG_{high} - Rf$ is the return from a value-weighted portfolio long the 10% highest rated-ESG stocks and $ESG_{low} - Rf$ is the return from a value-weighted portfolio long the 10% lowest-rated ESG stocks. MKT is the excess market return, with RF being the one month t-bill rate. SMB is the average return of nine small stock portfolios minus the average return on nine big stock portfolios. HML is the average return of two value portfolios minus two growth portfolios. RMW is the average return on two robust operating portfolio minus the average return on two weak operating profit portfolios. CMA is the average return on two conservative investment portfolios minus the average return on two aggressive investment portfolios.

Description	N	Min	5^{th}	25^{th}	Median	75^{th}	95^{th}	Max	Mean	Std	Skew	Kurt
$ESG_{low} - ESG_{high}$	102	-0.046	-0.034	-0.012	0.004	0.016	0.046	0.066	0.003	0.023	0.458	0.254
$ESG_{high} - Rf$	102	-0.090	-0.052	-0.009	0.012	0.030	0.055	0.117	0.009	0.037	-0.090	1.082
$ESG_{low} - Rf$	102	-0.080	-0.046	-0.011	0.016	0.035	0.063	0.089	0.012	0.033	-0.201	-0.099
MKT	102	-0.096	-0.060	-0.007	0.011	0.031	0.068	0.114	0.011	0.036	-0.300	0.823
SMB	102	-0.046	-0.038	-0.019	0.001	0.013	0.036	0.068	-0.000	0.023	0.179	-0.273
HML	102	-0.041	-0.032	-0.015	-0.003	0.009	0.036	0.083	-0.002	0.213	0.884	1.526
RMW	102	-0.040	-0.021	-0.010	0.002	0.001	0.026	0.035	0.001	0.015	-0.130	-0.215
CMA	102	-0.033	-0.022	-0.010	-0.000	0.009	0.024	0.037	0.000	0.014	0.223	-0.207

Correlations	$ESG_{LMH,10\%}$	$ESG_{high\,10\%}$	$ESG_{low\,10\%}$	MKT	SMB	HML	RMW	CMA
$ESG_{low} - ESG_{high}$	1	-0.460	0.290	-0.087	-0.033	-0.240	-0.072	-0.225
$ESG_{high} - Rf$	-0.405	1	0.584	0.752	0.215	0.183	-0.216	0.184
$ESG_{low} - Rf$	0.260	0.729	1	0.731	0.287	0.000	-0.195	0.088
MKT	-0.170	0.894	0.772	1	0.285	0.049	-0.346	-0.029
SMB	0.027	0.360	0.416	0.341	1	0.017	-0.511	-0.028
HML	-0.044	0.129	0.106	0.084	0.103	1	-0.176	0.559
RMW	-0.013	-0.200	-0.231	-0.290	-0.475	-0.239	1	0.012
CMA	-0.123	0.058	0.031	-0.056	-0.010	0.630	0.046	1

5 Results

5.1 Time-Series Factor Regression Results

Table 2 shows the results of 5-factor time-series regressions for a value-weighted portfolio long the 10% bottom-rated and short the 10% top-rated stocks between 2010 and 2018, along with their separate long portfolios. Our results are consistent with the findings of Pastor, Stambaugh & Taylor (2019), who found that investors who prefer responsible assets, earn lower expected returns. All specifications for the zero investment portfolio are statistically significant at the 1% level, with a stable intercept, culminating in a 5-factor alpha of 56 basis points. The different long portfolios show that the largest influence comes from strong performance from the low-rated ESG portfolio. The MKT-coefficient for the low-rated portfolio is considerably lower, indicating that it carries less systematic risk. The CMA-coefficient indicates that the high-rated ESG firms invest more conservatively, significant at the 1% level.

Table 2: Time-Series Regressions - 10$^{\text{th}}$ percentile

Results from time-series regressions of value-weighted portfolios. $ESG_{low} - ESG_{high}$ is a portfolio long the bottom-rated 10% ESG companies and short the 10% highest-rated ESG companies from 2010-2018. $ESG_{low} - Rf$ is a portfolio long the 10% lowest-rated, and $ESG_{high} - Rf$ is a portfolio long the 10% highest-rated ESG-companies. Portfolio composition is changed in June of each year. MKT is the market premium. SMB is the return of a portfolio long small stocks and short large stocks. HML is the return of a portfolio long high book-to-market stocks and short low book-to-market stocks, RMW is the return of a portfolio long the most profitable companies and short the least profitable companies. CMA is the returns of a portfolio long conservative investment companies and short aggressive investment companies. Standard errors are adjusted for serial correlations using Newey West (1987) standard errors. ***1% significance; **5% significance; *10% significance.

2010-2018, value-weighted	ALPHA	MKT	SMB	HML	RMW	CMA
$ESG_{low} - ESG_{high}$	0.0052***	-0.1837**				
	(0.002)	(0.079)				
$ESG_{low} - ESG_{high}$	0.0054***	-0.2009**	0.0692			
	(0.002)	(0.084)	(0.126)			
$ESG_{low} - ESG_{high}$	0.0054***	-0.2011**	0.0724	-0.0220		
	(0.002)	(0.084)	(0.123)	(0.122)		
$ESG_{low} - ESG_{high}$	0.0053***	-0.2000**	0.0757	-0.0210	0.0135	
	(0.002)	(0.083)	(0.152)	(0.122)	(0.176)	
$ESG_{low} - ESG_{high}$	0.0056***	-0.2048**	0.0832	0.1029	0.0518	-0.2876
	(0.002)	(0.082)	(0.150)	(0.158)	(0.169)	(0.207)
2010-2018, value-weighted	ALPHA	MKT	SMB	HML	RMW	CMA
$ESG_{low} - Rf$	0.0040**	0.7594***	0.2021*	0.0416	0.2998**	0.0794
	(0.002)	(0.067)	(0.110)	(0.108)	(0.121)	(0.166)
$ESG_{high} - Rf$	-0.0016	0.9642***	0.1189*	-0.0612	0.2480**	0.3670***
	(0.001)	(0.037)	(0.069)	(0.066)	(0.113)	(0.109)

5.2 Fama MacBeth Regression Results

Since results show that over-performance from low-rated firms is greater than the under-performance from high-rated ESG firms, we here continue with a primary focus on low-rated ESG firms (see Appendix Table 16 for a similar specification with the high-rated ESG-portfolio). Table 3 presents parameters that are estimated using the Fama-MacBeth (1973) method, with standard errors using specifications by Newey and West (1987). The dependent variable is the excess return on stock i in period t, and the variable of interest is $ESGDUM_{low}$, which is a dummy variable equal to one if the company has an ESG-rating in the bottom 10%, and zero otherwise. We add variables one by one to see the effects of the variables on the dummy coefficient. Statistical significance of independent variables indicates that these had some predictive power on future returns in the regression period. $RETADJ1$ is the one-month momentum factor, and is negative and statistically significant at the 1% level, consistent with the findings of Jegadeesh (1990), who showed that stocks tend to exhibit short-term momentum reversal. $AVGMRET1$ is the rolling 12-month average return, and is positive and statistically significant at 1% for all specifications with the exception of the last, where it remains significant at the 5%-level. This is consistent with the findings of Jegadeesh and Titman (1993), who showed that past winners had a tendency to continue to do well and past losers had a tendency to keep under-performing. $LOGTURN1$ is negative and significant at the 1% level, consistent with the *illiquidity premium* (e.g Stoll and Whaley (1983)). The size coefficient, denoted by $LOGSIZE1$, is the variable that impose most influence on our dummy coefficient of interest. Inconsistent with the findings of Fama and French (1993), who showed that small companies have had a tendency to outperform large companies, the coefficient is positive and significant at the 1% level, reducing the size of the portfolio-coefficient from 0.0047 to 0.0033. While the coefficient remains significant at the 5%

level, this drop in magnitude indicates that the over-performance from the value-weighted portfolio consisting of low-rated ESG firms is in part driven by a positive contribution from large firms.[6]

Table 3: Fama Macbeth - Company, 10% ESG 2010-2018

This table reports results from Fama and Macbeth (1973) cross-sectional regressions for the period 2010-2018 on the monthly return of stocks net of the risk-free rate on the lagged values of a set of well-known predictors of stock returns. $ESGDUM_{low}$ is a dummy variable which equals one if the company has an ESG-rating amongs the bottom 10% in year t, with ranking being registered starting from July each year. $BETA1$ is the 36-month rolling company beta. $LOGMB1$ is the logarithm of the market-book ratio. $RETADJ1$ is the monthly return of the company adjusted for delisting returns. $AVGMRET1$ is the average 12-month return. $LOGTURN1$ is the logarithm of average daily share turnover, during the past year. $LOGAGE$ is the logarithm of the age of the company. $BLEV1$ is the book-leverage of the company. $LOGSIZE1$ is the logarithm of the market capitalization. Standard errors are adjusted for serial correlation using standard errors as in Newey and West (1987). ***1% significance; **5% significance; *10% significance.

2010-2018	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$ESGDUM_{low}$	0.0054***	0.0053***	0.0052***	0.0050***	0.0052***	0.0047***	0.0047***	0.0033**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
BETA1	-0.0018	-0.0019	-0.0022	-0.0022	-0.0014	-0.0013	-0.0013	-0.0012
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
LOGMB1		0.0008	0.0009	-0.0002	0.0002	0.0004	0.0005	-0.0007
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001))
RETADJ1			-0.0149**	-0.0206***	-0.0203***	-0.0209***	-0.0209***	-0.0221***
			(0.007)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
AVGMRET1				0.0884***	0.0860***	0.0833***	0.0807***	0.0703**
				(0.031)	(0.031)	(0.030)	(0.030)	(0.029)
LOGTURN1					-0.0034***	-0.0033***	-0.0033***	-0.0047***
					(0.001)	(0.001)	(0.001)	(0.001)
LOGAGE						0.0023**	0.0023**	0.0006
						(0.001)	(0.001)	(0.001)
BLEV1							0.0006	-0.0022
							(0.003)	(0.003)
LOGSIZE1								0.0019***
								(0.001)

5.3 ESG-ratings and Institutional Ownership

We follow the approach proposed by Hong and Kaperczyk (2009) of running a pooled panel OLS regression with Moulton's (1986) standard errors clustered at the 48-industry level, with institutional ownership as the dependent variable. The $ESGDUM_{low}$-variable is defined similarly as in section 5.2. If the difference in performance is related to active investment strategies from institutional investors, such as negative screening or impact investing, this should be reflected by the coefficient being significantly different after

[6]See Appendix for time-series regressions with equal-weighted portfolios.

controlling for other factors proven to influence their investment behavior. Our results are reported in Table 4. Specification 1-5 are different permutations of our independent variables, where moderately correlated variables are rotated. In the 6$^{\text{th}}$ we include all variables, except for $LOGPRINV$, since the price inverse shows strong, negative correlation with $LOGSIZE$, and $LOGYIELD$, which is a consequence of a non-linear preference for dividend yield from institutional investors which makes interpretation difficult[7]. If institutional investors on average have performed negative screening of the 10% lowest-rated ESG stocks, we expect to see a negative and statistically significant $ESGDUM_{low}$-coefficient, yet the coefficient is consistently positive. Only two specifications have statistically significant $ESGDUM_{low}$ coefficients, but they both have a positive coefficient sign, indicating that institutional owners hold more low-rated ESG stocks. The strongest result is from permutation 3, which has a size of 0.0474 and is statistically significant at the 1% level, but the permutation does not control for firm size. A coefficient size of 0.0174 in our 6$^{\text{th}}$ specification indicates that institutional investors hold 1.74% more stocks in low-rated ESG firms in absolute terms, and approximately 2.8% more in relative terms, which is of little economic significance even if it had been statistically significant. When splitting the dependent variables into subgroups, where regression specification 7 refers to holdings by banks, insurance companies and 'other' institutional owners, and specification 8 refers to stock ownership by mutual funds and independent investment advisors, the former group holds 2.71% more stocks in the low-rated ESG-firms, statistically significant at the 5% level. These investors also tend to hold significantly less momentum stocks, and significantly more of high trading volume stocks. This is consistent with a focus on long-term investing and low-cost trading strategies, which are both somewhat inconsistent with trading strategies related to

[7]Grinstein and Michaely (2005) found that institutional investors prefer companies that pay dividend yield, but prefers companies that pay low dividends yield over companies that pay high dividend yields

Table 4: Institutional Ownership, 10% Lowest Rated

This table reports summary statistics for the variables used for the eight sets of regressions. In the first six, the dependent variable is overall institutional ownership (*IO*), which is calculated at the end of each year. In regression (7) the dependent variable is the aggregate ownership of Thompson Reuters category owners (1),(2) and (5); banks, insurance companies and other. In regression (8) the dependent variable is owner types (3) and (4); mutual funds and independent investment advisors. $ESGDUM_{low}$ equals one if a stock is amongst the 10% lowest rated ESG-companies and zero otherwise. *LOGSIZE* is the logarithm of the market capitalization of the company. *BETA* is the firms industry beta. *LOGMB* is the logarithm of the market-to-book ratio. *LOGYIELD* is the logarithm of the yearly dividend ratio divided by the price at the end of the year. *LOGAGE* is the logarithm of the number of years the company has been listed at COMPUSTAT at the end of the year. *LOGPRINV* is the logarithm of the inverse of the price at the end of the year. *LOGSTDRET* is the daily stock return standard deviation during the past year. *AVGMRET* is the average monthly return during the past year. *LOGBB* is the logarithm of the buyback ratio of the company during the past year. *LOGTURN* is the logarithm of average daily share turnover during the past year. *NASDAQ* equals one if the company is listed on NASDAQ and zero otherwise. *S&P500* equals one if the company is on the S&P500-index and zero otherwise. These are the results of pooled OLS regressions with Moulton's (1986) standard errors, clustered at the 48-industry groupings. The ownership data covers the period 2010-2018. ***1% significance; **5% significance; *10% significance.

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$ESGDUM_{low}$	0.0169	0.0282*	0.0474***	0.0218	0.0239	0.0174	0.0271**	-0.0106
	(0.019)	(0.016)	(0.016)	(0.019)	(0.019)	(0.016)	(0.013)	(0.008)
LOGSIZE	0.1263***			0.1317***	0.0863***	0.0916***	0.0651***	0.0258***
	(0.005)			(0.006)	(0.007)	(0.012)	(0.008)	(0.004)
BETA	0.1324***	0.0717**	0.1239**	0.1576***	0.1236**	0.1331***	0.0785**	0.0464***
	(0.042)	(0.035)	(0.053)	(0.044)	(0.050)	(0.048)	(0.034)	(0.016)
LOGMB		0.0027	0.0154*	-0.0178***		-0.0162**	-0.0154***	-0.0005
		(0.007)	(0.008)	(0.006)		(0.007)	(0.005)	(0.002)
LOGYIELD			-0.0078***	-0.0073***				
			(0.002)	(0.002)				
LOGAGE			-0.0022	-0.0005		-0.0072	-0.0000	-0.0075***
			(0.007)	(0.006)		(0.006)	(0.004)	(0.003)
LOGPRINV		-0.1574***						
		(0.005)						
LOGSTDRET			-0.3914***			-0.1443***	-0.0954***	-0.0507***
			(0.025)			(0.027)	(0.020)	(0.008)
AVGMRET					-0.0461	-0.2264***	-0.1999***	-0.0146
					(0.057)	(0.067)	(0.052)	(0.021)
LOGBB			0.0068***		0.0098***	0.0070***	0.0054***	0.0015***
			(0.002)		(0.002)	(0.002)	(0.001)	(0.001)
LOGTURN			0.1759***		0.0699***	0.0957***	0.0712***	0.0238***
			(0.006)		(0.011)	(0.013)	(0.009)	(0.004)
NASDAQ	0.0079			0.0069		0.0100	0.0072	0.0028
	(0.013)			(0.013)		(0.015)	(0.011)	(0.004)
S&P500	-0.2892***	-0.0597***	-0.0923***	-0.2845***		-0.2664***	-0.1922***	-0.0717***
	(0.022)	(0.011)	(0.015)	(0.023)		(0.028)	(0.021)	(0.008)

short- to medium-term fluctuations of ESG-ratings. While the $ESGDUM_{low}$-coefficient is statistically significant for some permutations, it appears difficult to reject the null hypothesis of zero difference between institutional ownership of low-rated ESG stocks and other stocks. Running a similar regression with a dummy variable consisting of the 10% highest-rated ESG-firms yields similar results (Appendix Table 18).

5.4 Institutional Ownership of Industries

While we could not find evidence of negative screening of single stocks, there could potentially be more stigma tied to investing in low-rated ESG industries, such as investing in industries known for high levels of carbon emissions. To test for this, we select the industries with the lowest ESG-ratings using time-series means from 2010 to 2018[8]. We follow Hong and Kaperczyk's (2009) approach of investigating how well these companies perform against a portfolio of comparable industries. The lowest-rated industries are Soda, Coal, Fun, Tobacco and Fabricated Products, where our chosen comparisons are Beer, Oil, Toys, Food and Steel. Hong and Kaperczyk constructed a dummy variable equal to one if a company resides in either of the low-rated industries or comparable industries ($GDUM$). We include $GDUM_{low}$ to separate between institutional ownership differences that are caused by ESG-scores from ownership differences caused by unrelated trends[9]. Table 5 reports the overall results, where $ESGINDDUM_{low}$ is large, negative and significant on the 5% level for all regression specifications, except for a regression specification 5, in which we do not control for the preferences of companies listed on the S&P500-index. A negative coefficient of -0.0851 in our last regression specification indicates that institutional owners held approximately 14% less of the market cap in low rated ESG industries compared to other industries, after controlling for known investment preferences. Investigations from preceding time-periods shows a marked drop in institutional ownership for these industries around 2010, consistent with negative screening caused by an increased focus on ESG-ratings (Appendix Table 19).

One concern when performing this analysis, however, is that our results could be heavily influenced by the 'sin'-effect, proposed by Hong and Kaper-

[8]see Appendix B for a full list of industries and time-series mean ratings

[9]E.g. $GDUM_{low}$ is able to make a distinction between differences in divestment from coal that are caused by low ESG-ratings and a general trend of divesting in stocks from companies involved in fossil fuel industries, because the dummy variable also includes companies from the comparable oil-industry

Table 5: Institutional Ownership Industry Regressions: Low-Rated

This table reports summary statistics for the variables used for the eight sets of regressions. In the first six, the dependent variable is overall institutional ownership (IO), which is calculated at the end of each year. In regression (7) the dependent variable is the aggregate ownership of Thompson Reuters category owners (1),(2) and (5); banks, insurance companies and other. In regression (8) the dependent variable is owner types (3) and (4); mutual funds and independent investment advisors. $ESGINDDUM_{low}$ equals one if a stock is in a low-ESG rated industry (Soda, Fun, Coal, Fabricated Products or Smoke) and zero otherwise. $GDUM_{low}$ is a dummy variable which is one if the company resides in any of the industries included in $ESGINDDUM_{low}$ or their comparable industries (Beer, Toys, Oil, Steel or Food) and zero otherwise. $LOGSIZE$ is the logarithm of the market capitalization of the company. $BETA$ is the firms industry beta. $LOGMB$ is the logarithm of the market-to-book ratio. $LOGYIELD$ is the logarithm of the yearly dividend ratio divided by the price at the end of the year. $LOGAGE$ is the logarithm of the number of years the company has been listed at COMPUSTAT at the end of the year. $LOGPRINV$ is the logarithm of the inverse of the price at the end of the year. $LOGSTDRET$ is the daily stock return standard deviation during the past year. $AVGMRET$ is the average monthly return during the past year. $LOGBB$ is the logarithm of the buyback ratio of the company during the past year. $LOGTURN$ is the logarithm of average daily share turnover during the past year. $NASDAQ$ equals one if the company is listed on NASDAQ and zero otherwise. *S&P500* equals one if the company is on the S&P500-index and zero otherwise. These are the results of pooled OLS regressions with Moulton's (1986) standard errors, clustered at the 48-industry groupings. The ownership data covers the period 2010-2018. ***1% significance; **5% significance; *10% significance.

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$ESGINDDUM_{low}$	-0.1329***	-0.1039***	-0.1059***	-0.0928***	-0.0754	-0.0851**	-0.0550**	-0.0295**
	(0.032)	(0.035)	(0.041)	(0.035)	(0.047)	(0.036)	(0.025)	(0.012)
$GDUM_{low}$		-0.0087	-0.0057	-0.0419***	-0.0497***	-0.0369***	-0.0240**	-0.0136***
		(0.018)	(0.018)	(0.016)	(0.018)	(0.013)	(0.010)	(0.004)
$LOGSIZE$	0.1269***			0.1323***	0.0886***	0.0929***	0.0660***	0.0263***
	(0.005)			(0.006)	(0.007)	(0.012)	(0.008)	(0.004)
$BETA$	0.1511***	0.0854**	0.1321**	0.1354***	0.1663***	0.1283**	0.0826**	0.0467***
	(0.043)	(0.034)	(0.057)	(0.048)	(0.055)	(0.052)	(0.036)	(0.017)
$LOGMB$		-0.0012	0.0130*	-0.0214***		-0.0192***	-0.0173***	-0.0016
		(0.006)	(0.008)	(0.006)		(0.007)	(0.005)	(0.003)
$LOGYIELD$			-0.0076**	-0.0071***				
			(0.002)	(0.003)				
$LOGAGE$			-0.0045	0.0030		-0.0056	0.0018	-0.0073***
			(0.006)	(0.005)		(0.005)	(0.004)	(0.002)
$LOGPRINV$		-0.1596***						
		(0.005)						
$LOGSTDRET$			-0.3963***			-0.1433***	-0.0952***	-0.0496***
			(0.023)			(0.027)	(0.019)	(0.008)
$AVGMRET$					-0.0177	-0.2099***	-0.1818***	-0.0168
					(0.057)	(0.066)	(0.048)	(0.023)
$LOGBB$			0.0065***		0.0089***	0.0067***	0.0051***	0.0015***
			(0.002)		(0.002)	(0.002)	(0.001)	(0.001)
$LOGTURN$			0.1741***		0.0684***	0.0945***	0.0702***	0.0237***
			(0.006)		(0.011)	(0.013)	(0.009)	(0.004)
$NASDAQ$	0.0044			0.0025		0.0058	0.0045	0.0016
	(0.013)			(0.013)		(0.015)	(0.011)	(0.004)
S&P500	-0.2879***	-0.0568***	-0.0902***	-0.2842***		-0.2676***	-0.1931***	-0.0717***
	(0.021)	(0.010)	(0.015)	(0.022)		(0.028)	(0.020)	(0.009)

czyk (2009), where they found that stocks from companies in the tobacco-, gambling-, and alcohol-industries were held significantly less by institutional investors. Since our portfolio of low-rated ESG industries include Tobacco and Fun (where the latter includes a large portion of the gambling-companies), it is imperative to check whether the results are robust to the exclusion of these industries. While the coefficient in the ownership-regressions remains largely the same (Appendix Table 20), the standard errors increase, and only the first two regression specifications show statistical significance at the 10% level. Table 6 reports value-weighted zero investment portfolios long low-rated ESG industries and short their comparable industries both with and without stocks from sin industries. The portfolio that includes sin industries returned a monthly 5-factor alpha of 0.0061 between 2010 and 2018, significant at the 5% level, while the portfolio without sin industries returned a non-significant negative 5-factor alpha of 0.0018 in the same time period. While one could argue the economic significance of the large coefficients in the ownership regression, the relative holdings from institutional investors have clearly not led to superior financial returns when we exclude sin industries from our sample. The results therefore appears to be consistent with the 'sin' stock findings of Hong and Kaperczyk (2009), but does not show robustness to the removal of these stocks, and does therefore not support our hypothesis of ESG-ratings leading to exogenous shifts in demand from institutional investors, nor that this leads to abnormal excess returns.

5.5 Additional Robustness Checks

We start by running additional time-series factor regressions with equal-weighted-portfolios for the time period of 2010 to 2018, and both value-weighted and equal-weighted portfolios for the period of 2004 to 2018 (Appendix Table 16). This is to get a better idea of how our results hold for the average low/high-rated ESG firms and if they are consistent when

Table 6: Industry Time-Series Regressions: Low ESG

Results from time-series regressions of a value-weighted zero investment portfolio long all companies from a selection of low-rated ESG industries and short their comparable industries. $ESGIND_{low}$ is a portfolio consisting of all companies from the Soda-, Fun-, Coal-, Fabricated Products-, and Smoke-industries. $COMP_{low}$ is a portfolio consisting of companies from the Beer-, Toys-, Oil-, Steel-, and Food-industries. $ESGIND_{lex}$ is a value-weighted portfolio consisting of companies from the Soda-, Coal-, and Fabricated Products-industries, while $COMP_{lex}$ is a value-weighted portfolio consisting of companies from the Beer-, Oil-, and Steel-industries. MKT is the excess return on the market. SMB is the return of a portfolio long small stocks and short large stocks. HML is the return of a portfolio long high book-to-market stocks and short low book-to-market stocks, RMW is the return of a portfolio long the most profitable companies and short the least profitable companies. CMA is the returns of a portfolio long conservative investment companies and short aggressive investment companies. The period investigated is from 2010 to 2018. Standard errors are adjusted for serial correlations using the Newey West correction. ***1% significance; **5% significance; *10% significance.

2010-2018	ALPHA	MKT	SMB	HML	RMW	CMA
$ESGIND_{low} - COMP_{low}$	0.0092***	-0.1061				
	(0.003)	(0.071)				
$ESGIND_{low} - COMP_{low}$	0.0078***	0.0420	-0.6148***			
	(0.003)	(0.071)	(0.170)			
$ESGIND_{low} - COMP_{low}$	0.0064**	0.0615	-0.4841***	-0.7657***		
	(0.003)	(0.078)	(0.125)	(0.180)		
$ESGIND_{low} - COMP_{low}$	0.0059**	0.0795	-0.4304***	-0.7535***	0.2422	
	(0.003)	(0.083)	(0.133)	(0.175)	(0.167)	
$ESGIND_{low} - COMP_{low}$	0.0061**	0.0774	-0.4272***	-0.7072***	0.2562	-0.1074
	(0.003)	(0.085)	(0.130)	(0.217)	(0.173)	(0.244)
Ex sin stocks	ALPHA	MKT	SMB	HML	RMW	CMA
$ESGIND_{lex} - COMP_{lex}$	0.0015	-0.0858				
	(0.005)	(0.149)				
$ESGIND_{lex} - COMP_{lex}$	0.0000	0.0632	-0.6191***			
	(0.005)	(0.147)	(0.217)			
$ESGIND_{lex} - COMP_{lex}$	-0.0011	0.0796	-0.5100***	-0.6393***		
	(0.005)	(0.157)	(0.195)	(0.210)		
$ESGIND_{lex} - COMP_{lex}$	-0.0015	0.0949	-0.4642**	-0.6289***	0.2065	
	(0.005)	(0.160)	(0.194)	(0.207)	(0.253)	
$ESGIND_{lex} - COMP_{lex}$	-0.0018	0.1000	-0.4720**	-0.7414***	0.1724	0.2609
	(0.005)	(0.157)	(0.193)	(0.228)	(0.246)	(0.401)

expanded to include time-periods preceding our period of interest. One concern with expanding the investigation period backwards is the lack of companies with ratings. Consequently, we are cautious of drawing conclusions from tests of portfolio performance from years preceding 2010. The equal-weighted zero investment portfolio has a 5-factor alpha of 0.034 from 2010 to 2018, significant at the 10% level, while dropping to a non-statistically significant 0.0022 when expanding the time-period back to 2004. Results from long portfolios reveal that this is an effect of higher performance from high-rated ESG companies in the years prior to 2010 rather than a decrease in performance from low-rated ESG stocks. An equal-weighted portfolio long the 10% lowest-rated ESG stocks yielded a monthly 5-factor alpha of 0.0030 from 2004 to 2018, significant at the 10% level. The results from the value-weighted long portfolios from 2004 to 2018 show that the signs are persistent for both low- and high-rated ESG stocks, with low-rated stocks yielding a positive alpha and high-rated stocks yielding a negative alpha. Nonetheless, both the long portfolios and the zero investment portfolio are not statistically significant. Results of Fama-MacBeth (1973) regressions for the period of 2004 to 2018 (Appendix Table 18) show that the dummy coefficient for low-rated ESG firms is 0.0034 and significant at the 5% level, and that the coefficient for the high-rated ESG firms is -0.0006 and not statistically significant. Interestingly, both coefficients are almost identical in size, sign and significance as for the sample starting in 2010.

We then re-specify our portfolio breakpoints by running time-series factor regressions on zero investment portfolios with breakpoints at 2.5%, 5% and 20% of rated companies (Appendix Table 21). We find that the portfolio alphas increase to 0.0086, significant on the 1%-level when reducing the breakpoint to 5%. The size and significance of alpha is almost identical when reducing it to 2.5%. The portfolio alpha decreases to 0.0029, significant at the 5% level

when increasing the breakpoint to 20%. The results are consistent with value-weighted portfolios of low-rated companies performing well in terms of risk-adjusted returns, while portfolios of high-rated ESG stocks performing poorly, since alphas in general increase in magnitude (increasingly negative in the case of portfolios consisting of high-rated ESG stocks) when portfolio breakpoints are lowered and decreasing when expanding the breakpoints to include more companies that lean towards a 'neutral' rating. We also report equal-weighted portfolios, which show the same general tendency. Interestingly, the value-weighted portfolio long the 20% highest-rated ESG stocks have a negative monthly alpha of 0.0018, significant at the 5% level, which is almost identical to the 2% annualized under-performance of the Dow Jones Sustainable Index North American Index compared to SP500, despite the index being based on ratings from a different vendor. This may indicate that there is some consistency in ESG-ratings across vendor platforms.

We also test whether our results stem from spurious effects related to forming portfolios in June rather than some other month. To do this, we re-run the time-series regressions with portfolios formed in January and December (Appendix Table 22), which show that portfolio alphas have the same signs and are still statistically significant. While the zero investment portfolio alpha is reduced to 0.0041, significant at the 5% level when re-shuffling portfolios in January, the coefficient drops to 0.0030, significant only on the 10% level when doing this in December. The relatively large and positive alphas regardless of portfolio formation month is none-the-less indicative of persistence in returns from low- and high-rated ESG stocks over longer holding-periods.

We then winsorize our dataset at the 0%, 1%, 5% and 10% levels to see how the return results are affected by outliers (Appendix Table 23). Results indicate that the returns are affected by outliers to some degree. The 5-factor alpha coefficient on the dataset with no winsorization increases to 0.0068 (1% significance), while the coefficient is similar to our original results when win-

sorizing at the 1% level. When increasing the winsorization to 5% and 10%, the alpha coefficient drops in magnitude to 0.0040 and 0.0039, respectively, both statistically significant at the 5% level. 5-factor alphas from portfolios long both low- and high-rated ESG stocks show that the portfolios are affected similarly by the winsorization level, indicating that our results are affected, but not exclusively caused by single outliers.

One way to control for public perception of stocks with low and high ESG-ratings is to run time-series factor regressions (Appendix Table 24) and Fama-MacBeth regressions (Appendix Table 25) with returns subtracted from a three-day period surrounding announcement dates for all companies. Porta (1997) found that value stocks appear to show consistent abnormal earnings surprise returns, indicating that investors tend to systematically underrate returns performance from some groups of stocks. A large drop in coefficient size for either time-series alphas or Fama-MacBeth dummy coefficients for regressions with low-rated ESG firms would be indicative that the large return difference is caused by investors underrating their earning potential. Our time-series factor regression results show that all of our value-weighted portfolios are nearly unaffected by removing the announcement returns, while the coefficient size for the equal-weighted low-rated ESG stock portfolio halves in magnitude, indicating that the market underestimates the earnings potential for small capitalization stocks with low ESG-ratings, but that this does not holf for the largest low-rated ESG-firms.

As an additional robustness check for our time-series regressions, we use Carhart's (1997) 4-factor model instead of Fama and French (2015) 5-factor model (Appendix Table 16). The alphas in the 4-factor long portfolios both increase from 0.0040 to 0.0045 for low-rated stocks and from -0.0016 to -0.0006 for high-rated stocks, with the momentum factor having small but statistically non-significant loading. Even though the alpha of the zero investment portfolio

drops from 0.0056 to 0.0051 (significant at the 5% level), the momentum factor does not appear to add much in terms of explanatory power to our analysis.

We also check for institutional ownership of low- and high-rated ESG-stocks for all our alternative portfolio breakpoints and different categories (Appendix Table 26). In the period spanning from 2010 to 2018, the results show that banks, insurance companies and 'other' institutional owners owned significantly more of low-rated ESG-stocks at both the 10^{th} and 20^{th} percentile. In the same period, mutual funds and independent investment advisors owned significantly less of both high and low ESG-stocks at the 20^{th} percentile, but the coefficient sizes are all small and are thus not economically significant. Overall, these results appears to support the idea that differences in returns for low/high-rated ESG stocks are not driven by demand from institutional investors.

One possibility is that some institutional investors adjust to the ESG-related behavior from other institutional investors, in which some buy more when others perform negative screening and vice versa, hoping to earn quasi-arbitrage, as described by Grossman & Stiglitz (1980) and Shleifer (1997). An imperfect proxy for institutional ownership on the entity-level is the so-called *breadth* of ownership, which is defined as the percentage of mutual fund managers who hold a long position in a given stock at time t (Chen et al. (2002)). We re-run the regressions with the logarithm of breadth of ownership ($LOGBREADTH$) as the dependent variable (Appendix Table 27). The coefficient signs and statistical significance levels, however, are the same as for institutional ownership both for portfolios of low/high-rated ESG-stocks, on the company and industry-level, also when including/excluding sin stocks, and thus its inclusion fail to offer additional insight to our analysis.

Lastly, we have performed a similar type of analysis for high-rated ESG industries and self-reported ESG-scores, but have failed to find consistent return- or ownership-patterns.

5.6 Limitations and Suggestions for Further Research

ESG-ratings is a recent phenomena and our sample of rated companies is small, having increased from 11% of available companies in 2010 to 40.5% of companies in 2018, and the findings are therefore likely to be biased compared to future periods when rating vendors are approaching full ESG-rating coverage. One potential argument we cannot address, given that our sample period do not include a severe recession, is that firms with high ESG-ratings may be less risky and perform better in severe financial crises. Even though we have ratings from the Great Recession from 2007 to 2009, only 6-8% of companies were rated at the time, making analysis difficult. Additionally, one third of Fama and French's 48 industries (1997) have less than 10 unique rated companies across our sample period, making conclusions based on industry-ratings problematic. If ratings are inconsistent across platforms offering ESG-ratings, the results may also be inconsistent depending on choice if rating-vendor. There are several vendors that offer ESG-ratings which we do not have access to and we have therefore chosen to perform our analysis using data from one vendor. Our study does not control for the presence of transaction costs, and the portfolio alphas are therefore not reflective of realized investor returns if such a strategy was followed.

Suggestions for further research include repeating the same analysis when ESG-rating coverage has increased and to research how difference in ESG-ratings across vendor platforms changes the portfolio composition. Another possibility is to break down ESG-ratings into smaller categories, such as focusing only on environmental or governance-related ratings, which could provide further insight into how scores in different categories correlate with returns.

6 Conclusion

We find that value-weighted zero investment portfolios long the 10% lowest-rated ESG stocks and short the 10% highest-rated ESG stocks, have provided an annualized 5-factor alpha of 6.9% between 2010 to 2018, with the largest positive influence coming from an over-performance from large capitalization stocks with low ESG-ratings. Our robustness checks indicate that reducing the breakpoint to 5% provide an annualized alpha of nearly 11%, while the zero investment portfolio consisting of the 20% highest/lowest ESG-rated companies have provided an annualized alpha of approximately 3.5%. The increase in portfolio returns with a lower breakpoint, along with a decrease in portfolio returns when expanding the sizes of the portfolios to include companies that lean more towards a 'neutral' rating is indicative of better performance from companies with lower ESG-ratings, and that the opposite relationship holds for stocks with high ESG-ratings, consistent with recent findings from Pastor, Stambaugh & Taylor (2019). Changing the portfolio formation month or using an equal-weighted strategy would have yielded positive and statistically significant monthly alphas of between 30 and 41 basis points depending on specification. Tests with different winsorization levels indicates that the results are influenced, but not solely caused by outliers.

We cannot find evidence of ESG-ratings having caused behavioral changes from institutional investors such as them performing negative screening of companies with low ESG-ratings or impact investing in companies with high ESG-ratings. We find evidence of significantly lower institutional ownership in low-rated industries, and find that a value-weighted zero investment portfolio long these industries and short comparable industries have provided an annualized 5-factor alpha of 7.6% between 2010 and 2018, but these results are not robust to the removal of sin stocks and we can therefore not make any causal inference between ESG-ratings and ownership driven return differences.

APPENDIX

A List of Variables

Here we report a list of all our chosen variables, a description, its data source (DB), specification of the variables retrieved and used for the construction, and an article source. In the construction-column we report the variables as they are named in their respective databases and the arithmetic calculations, if there are any. Some of the variables have been retrieved from (KFDL) The data library can be found at: mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

Table 7: Variable Descriptions and Construction

Institutional Ownership Regression				
Name	Description	DB	Construction	Source
IO	The sum of all institutional stock ownership divided by total shares outstanding	Thompson-Reuters 13-F Filings & CRSP Monthly	*sum of all institutional stock holdings / shrout / 1000*	Hong and Kacperczyk (2009)
LOGSIZE	The logarithm of the absolute value of stock price multiplied by shares outstanding	CRSP Monthly	*shrout*prc*	Smith (1996), Nagel (2005)
LOGPRINV	The logarithm of the inverse of the absolute value of the stock price	CRSP Monthly	$1/prc$	Falkenstein (1996)
LOGTURN	The 12-Month rolling mean of monthly share turnover divided by total shares outstanding	CRSP Daily & CRSP Monthly	*vol/(shrout * 1000)*	Diamond and Verrecchia (1991)
NASDAQ	A dummy variable which equals 1 if the stock resides on NASDAQ, and 0 otherwise.	CRSP Monthly	*exchcd = 3*	Keim and Madhavan (1997), Chan and Lakonishok (1997)
LOGAGE	The logarithm of the number of years listed on Compustat Fundamentals Annual	COMPUSTAT Fundamentals Annual	*datadate*	Del Guercio (1996)
S&P500	A dummy variable which equals 1 if the stock is listed on S&P500, and 0 otherwise.	COMPUSTAT Index Constituencies	*conm = S&P 500 Comp-Ltd*	Del Guercio (1996)
LOGSTDRET	The logarithm of the mean standard deviation of daily share holding period return, calculated yearly, adjusted for delisting returns.	CRSP Daily	*ret*	Dennis and Strickland (2002)

LOGMB	The logarithm of the market capitalization of the company divided by the book equity. Market capitalization is calculated by taking the absolute value of price times the outstanding shares and then divided by the book equity. The book equity is calculated as the book value of stockholder's equity, plus balance sheet deferred taxes and investment credit minus the book value of preferred stock. To calculate the book value of preferred stock we use either redemption, liquidiation, or par value of preferred stock, in prioritized order. If neither is available we set preferred stock to zero.	Compustat Fundamentals Annual & CRSP Monthly	*(prc*shrout)/ ((seq+txdb+itcb-prtkrv* ***or*** *pstkl* ***or*** *pstk* ***or*** *0) * 1000)*	Fama and French (1993)
AVGMRET	The rolling 12-month mean holding period return, adjusted by delisting returns.	CRSP Monthly	*ret*	Jegadeesh and Titman (1993)
BETA	The historic industry-beta of the industry. The companies are divided into industries through using SIC-codes, where the SIC-codes from COMPUSTAT is used and the SIC-code is CRSP is used only if not available in Compustat. The industry definitions and industry returns are gotten from KFDL. We use the CRSP value-weighted market returns as a market proxy	CRSP Monthly & KFDL	*vwret*	Fama and French (1997) & Hong and Kacperczyk (2009)
LOGYIELD	The dividend payout ratio	WRDS Financial Ratios Suite	*divyield*	Grinstein and Michaely (2005)
LOGBB	The negative change in total shares outstanding over 12 months. If there is no negative change, it is set to zero.	CRSP Monthly	$shrout_t - shrout_{t-1}$	Grinstein and Michaely (2005)
LOGBREADTH	The logarithm of the percentage of mutual fund managers who are long in stock	CRSP Monthly/ Thompson Reuters 13F	number of mutual fund managers with a long position / total mutual fund filers, adjusted for new entries and delistings	Chen et al. (2002)
Time-Series Regressions				
MKT	The market return minus the risk-free rate.	KFDL	$MKT/100$	Fama and French (1993)
SMB	The return of a portfolio of companies consisting of small stocks minus the returns of a portfolio of companies consisting of large stocks	KFDL	$SMB/100$	Fama and French (1993)
HML	The return of a portfolio of companies consisting of high book-to-market stocks minus the returns of a portfolio of companies consisting of low book-to-market stocks	KFDL	$HML/100$	Fama and French (1993)

RMW	The return of a portfolio of stocks consisting of highly profitable companies minus the returns of a portfolio of stocks consisting of low-profit companies	KFDL	$RMW/100$	Fama and French (2015)
CMA	The return of a portfolio of stocks consisting of passive investment companies minus the returns of a portfolio of stocks consisting of aggressive investment companies	KFDL	$CMA/100$	Fama and French (2015)
MOM	The return of a portfolio of stocks consisting of the companies with the highest returns from the last 12 months minus the returns of a portfolio of stocks consisting of the companies with the lowest returns for the past 12 months	KFDL	$MOM/100$	Jegadeesh and Titman (1993)
RF	The one month risk free-rates based on US treasury bills	KFDL	$RF/100$	
Cross-sectional Regressions				
LOGSIZE1	The logarithm of the absolute value of stock price multiplied by shares outstanding	CRSP Monthly	*shrout*prc*	Fama and French (1993)
AVGMRET1	The rolling 12-month mean holding period return, adjusted by delisting returns.	CRSP Monthly	*ret*	Jegadeesh and Titman (1993)
LOGMB1	The logarithm of the market capitalization of the company divided by the book equity. Market capitalization is calculated by taking the absolute value of price times the outstanding shares and then divided by the book equity. The book equity is calculated as the book value of stockholder's equity, plus balance sheet deferred taxes and investment credit minus the book value of preferred stock. To calculate the book value of preferred stock we use either redemption, liquidiation, or par value of preferred stock, in prioritized order. If neither is available we set preferred stock to zero.	Compustat Fundamentals Annual & CRSP Monthly	*(prc*shrout)/ ((seq+txdb+itcb-prtkrv* ***or*** *pstkl* ***or*** *pstk* ***or*** *0) * 1000)*	Fama and French (1993)
BETA1	The 36-month rolling company beta. We use the CRSP value-weighted market returns as a market proxy and adjust all returns for delisting returns	CRSP Monthly	*ret, vwret*	Fama and French (1997) & Haugen and Baker (1996)
BLEV1	The debt to assets ratio of the company	WRDS Financial Ratios Suite	*debt_assets*	Bhandari (1988), Haugen and Baker (1996)
RETADJ1	The monthly holding-period return, adjusted for delisting returns	CRSP Monthly	*ret*	Jegadeesh (1990)
LOGTURN1	The 12-Month rolling mean of monthly share turnover divided by total shares outstanding	CRSP Daily & CRSP Monthly	$vol/(shrout*1000)$	Stoll and Whaley (1983), Amihud and Mendelson (1986)

LOGAGE	The logarithm of the number of years listed on Compustat Fundamentals Annual	COMPUSTAT Fundamentals Annual	*datadate*	Hong and Kacperczyk (2009)
$RET_{ex} - Rf$	The return of a given month minus the daily returns for three days surrounding the announcement date, minus the risk-free rate	CRSP Monthly & CRSP Daily & COMPUSTAT Fundamentals Quarterly & KFDL	*ret, RF, adate*	Porta et al. (1997)
S&P500	A dummy variable which equals 1 if the stock is listed on S&P500, and 0 otherwise.	COMPUSTAT Index Constituencies	*conm = S&P 500 Comp-Ltd*	Hong and Kacperczyk (2009)

B Average ESG-rating per Industry

Table 8: Average ESG-Rating, Industry-level

Industry	Neutral	Industry	Self-rep
Soda	31.60	Coal	22.30
Fun	33.11	Soda	22.60
Coal	35.38	Smoke	26.06
Fabr. Prod.	36.57	Drugs	28.98
Smoke	36.67	Meals	29.16
PerSv	37.48	Health	29.25
Retail	38.16	Retail	29.28
Meals	38.22	Chips	29.70
Transport	38.62	Telecoms	29.89
Chips	38.62	PerSv	29.96
Autos	38.70	BusSv	30.16
Telecoms	38.82	Fun	30.19
Medical Eq.	38.96	Ships	31.38
Drugs	39.17	Toys	31.55
Health	39.19	Med. Eq.	31.61
BusSv	39.64	Lab. Eq.	32.50
Gold	39.73	Transport	33.03
Aero	39.73	Electric Eq.	33.64
Lab Eq.	39.76	Autos	33.66
Beer	39.86	Textile	34.02
Comps	39.96	Wholesale	34.26
Clothes	40.07	Machinery	34.41
BldMt	40.13	Paper	35.44
Machinery	40.28	Comps	35.45
Toys	40.63	Oil	35.62
Construction	40.65	Fabr. Prod	35.65
Books	41.17	Beer	36.24
Chemicals	41.28	Construction	36.31
Textile	41.41	BldMt	36.53
Hshld	41.90	Food	37.30
Oil	42.29	Aero	37.40
Paper	42.48	Clothes	38.42
Wholesale	42.57	Mines	38.74
Ships	42.78	Chemicals	39.02
Electric Eq.	43.06	Rubber	39.03
Food	43.68	Utilities	39.93
Steel	44.66	Steel	40.14
Utilities	44.86	Hshld	41.66
Rubber	45.08	Gold	43.29
Guns	45.66	Books	44.69
Agric	45.68	Boxes	47.66
Mines	46.34	Guns	55.50
Boxes	51.11	Agric	61.28

C ESG-Rating Coverage

Table 9: ESG-Rating Coverage 2003-2018

Number of companies with ESG-rating			
Year	Rated	Total	Coverage
2003	10	3586	0.0%
2004	108	3407	3.2%
2005	119	3262	3.6%
2006	174	3231	5.4%
2007	202	3117	6.5%
2008	213	3020	7.1%
2009	242	2999	8.1%
2010	312	2846	11.0%
2011	350	2681	13.1%
2012	371	2663	13.9%
2013	379	2574	14.7%
2014	384	2508	15.3%
2015	392	2527	15.5%
2016	410	2554	16.1%
2017	684	2491	27.5%
2018	976	2407	40.5%

D Lowest Decile Portfolio - Company List

This table reports all the companies that at some point has been included in the lowest decile portfolio between 2010-2018. *Permno* is the CRSP company identifier, Company name is the company name as specified in CRSP. Market Cap is the average market capitalization in the inclusion period, given in 100.000 USD. *Count* is the number of months the company was included in the portfolio. *Ret*(%) is the average monthly return in the inclusion period. The companies are ranked by size and market capitalization has not been winsorized.

Table 10: List of Lowest Decile ESG-Companies

Lowest Decile ESG-Ratings 2010-2018 - Company List				
Permno	Company Name	Market Cap	Count	Ret (%)
55976	WAL MART STORES INC	2,234,114	24	1.7168
21936	PFIZER INC	2,150,006	42	1.3354
66181	HOME DEPOT INC	1,939,723	30	1.3247
66093	AT&T INC	1,753,135	24	1.6684
14008	AMGEN INC	1,279,061	6	1.2901
17830	UNITED TECHNOLOGIES CORP	950,350	24	1.0897
87447	UNITED PARCEL SERVICE CORP	747,944	36	0.6399
15408	KRAFT HEINZ CO	655,938	6	-5.6150
25785	FORD MOTOR CO DEL	533,615	24	1.9112
87055	COSTCO WHOLESALE CORP	509,687	12	0.5232
61399	LOWES COMPANIES INC	506,521	24	3.2833
53613	MICRON TECHNOLOGY INC	493,760	6	-7.6357
64936	DOMINION ENERGY INC	469,232	6	1.2215
24205	NEXTERA ENERGY INC	468,280	66	1.5678
64311	NORFOLK SOUTHERN CORP	465,810	6	0.3267
13356	PHILLIPS 66	436,871	12	0.3080
76614	REGENERON PHARMACEUT. INC	398,212	24	0.2542
86356	EBAY INC	389,667	12	0.4661
93436	TESLA INC	346,313	30	0.1084
60628	FEDEX CORP	282,525	12	2.7567
79103	O'REILLY AUTOMOTIVE INC	267,116	6	4.1292
21207	NEWMONT MINING CORP	259,313	36	-1.4548
78975	INTUIT INC	258,274	36	2.0868
48486	LAM RESH CORP	246,284	6	-3.1678
91926	DELTA AIR LINES INC	224,629	24	4.3113
25582	HARRIS CORP	181,155	6	-0.6914
87657	EDWARDS LIFESCIENCES CORP	181,082	12	3.1293
15720	EDISON INTERNATIONAL	165,699	12	1.9412
23660	CINTAS CORP	158,332	30	2.0667
15859	AVANGRID INC	151,830	6	-0.5466
82651	WATERS CORP	148,351	6	-0.3635
78840	IAC INTERACTIVE CORP	144,919	6	4.0789
58683	SOUTHWEST AIRLINES CO	143,075	36	0.3264
23026	FIRSTENERGY CORP	137,069	12	-1.0298
11403	CADENCE DESIGN SYSTEMS INC	126,695	6	0.1286

85459	CH ROBINSON WORLDWIDE INC	117,232	12	1.9584
56724	CONAGRA INC	116,669	24	1.6489
90175	XPO LOGISTICS INC	114,717	6	-8.0178
89866	LKQ CORP	112,876	12	-0.0445
80080	EASTMAN CHEMICAL CO	110,622	12	2.0477
80286	TRACTOR SUPPLY CO	106,337	24	0.4971
25419	WHIRLPOOL CORP	100,473	102	0.8352
23579	TEXTRON INC	100,438	60	1.4631
14567	GRUBHUB INC	98,385	6	-3.3273
93101	LEAR CORP	95,138	6	-6.3940
80539	NEKTAR THERAPEUTICS	94,421	12	9.6222
21792	CENTERPOINT ENERGY INC	90,588	24	0.2658
10696	FISERV INC	86,963	12	1.4216
11674	DTE ENERGY INC	85,639	24	1.5164
32707	HELMERICH & PAYNE INC	85,566	30	0.1570
40125	DXC TECHNOLOGY CO	80,560	72	3.1057
86799	CONSOL ENERGY INC	76,173	12	-5.2984
54148	PULTE GROUP INC	74,523	6	-1.3850
23393	CHURCH & DWIGHT INC	73,668	24	1.9926
11896	MAXIM INTEGRATED PROD. INC	72,386	24	2.3868
49373	BLOCK H&R INC	71,637	60	1.7020
15315	GODADDY INC	71,426	12	4.4153
14634	PARSLEY ENERGY INC	68,714	6	-9.5188
13739	BRIGHT HORIZONS FAM SOL INC	66,939	6	1.6090
52329	JACOBS ENGINEERING GROUP	66,636	12	1.0061
81655	DARDEN RESTAURANTS INC	65,358	12	-0.2181
90808	EXPEDIA INC DE	63,463	12	4.5168
91611	FIRST SOLAR INC	62,631	12	3.0996
12623	HUNTINGTON INGALLS INDS INC	62,193	12	3.6510
14608	SABRE CORP	61,566	18	0.5118
40272	INTERNAT. FLAVORS & FRAG INC	56,000	21	2.9129
89353	JETBLUE AIRWAYS CORP	55,773	6	-2.0549
47941	TEGNA INC	55,101	12	-2.0707
52230	ROBERT HALF INTERNAT. INC	53,052	72	1.1172
90455	MONOLITHIC PWR SYS INC	50,686	18	1.4563
61313	DONALDSON INC	49,787	72	1.5835
14641	ZENDESK INC	48,578	18	4.7140
77918	LITTLEFUSE INC	48,227	12	3.0391
83906	STERICYCLE INC	48,041	6	-8.6490
13046	UBIQUITI NETWORKS INC	47,648	24	3.8154
14795	TIMKEN COMPANY	47,441	48	2.7138
89540	DICKS SPORTING GOODS	46,280	24	0.3038
89301	GAMESTOP CORP	43,574	12	0.9854
92648	COLFAX CORP	42,208	36	0.3642
45225	VALHI INC	41,246	24	-1.0765
60580	TORO COMPANY	40,017	60	2.4259
87812	SILICON LABOROTORIES INC	38,670	12	3.4602
93420	OASIS PETROLEUM INC	38,149	24	3.9103
75976	NEOGEN CORP	37,244	6	-4.6178

76081	THOR INDUSTRIES INC	37,157	42	0.9441
50017	RANGE RESOURCES CORP	36,927	6	-7.7937
76185	TYLER TECHNOLOGIES INC	36,527	12	3.2527
80128	VALMONT INDUSTRIES INC	34,808	12	0.2982
48523	LANCASTER COLONY CORP	34,482	12	1.2844
62341	PDC ENERGY INC	33,623	12	3.4234
14102	SPROUTS FARMERS MARKET INC	30,784	18	0.8489
41292	HEALTHCARE SERV. GROUP INC	30,753	6	-0.5927
13730	PBF ENERGY INC	30,146	12	-0.4482
80034	MADDEN STEVEN LTD	29,654	6	-2.2084
44134	KENNAMETAL INC	27,426	36	1.5733
66376	WATSCO INC	26,698	12	1.9930
87078	ALLSCR. MISYS HEALTHC. SOLS	25,906	66	-0.1916
86594	KORN FERRY INTERNATIONAL	25,544	12	5.4210
58771	REGAL BELOIT CORP	25,418	36	0.0655
65306	UNIFIRST CORP	24,990	18	0.2691
76515	COVANTA HOLDING CORP	24,895	12	1,6169
89397	VERINT SYSTEMS INC	23,989	54	1.3048
75603	CIRRUS LOGIC INC	23,458	6	-2.0166
11481	EBIX INC	21,999	18	-0.7193
87356	WORLD WRESTLING ENTMT INC	21,541	18	8.4188
90720	BUILDERS FIRSTSOURCE INC	21,466	12	1.7381
81282	ACI WORLDWIDE INC	20,778	24	1.4975
15638	GLOBAL BLOOD THERAP. INC	20,774	6	-0.0682
91977	B&G FOODS INC	20,481	2	- 0.1519
92432	ENSIGN GROUP INC	20,411	6	1.9928
87179	NETSCOUT SYSTEMS INC	20,028	6	-3.5310
37875	FULLER HB CO	19,993	12	1.0003
11343	SANDERSON FARMS INC	19,959	60	2.2801
23297	BRINKER INTERNATIONAL INC	19,815	12	4.9464
89290	SYNAPTICS INC	19,245	60	1.3060
16019	RED ROCK RESORTS INC	19,065	6	-7.0488
14168	PATTERN ENERGY GROUP INC	18,972	6	1.0056
90011	MAGELLAN HEALTH INC	18,382	30	0.1787
15647	SPX FLOW INC	18,108	18	-0.3208
89455	RUSH ENTERPRISES INC	17,843	12	1.7650
76839	NATIONAL BEVERAGE CORP	17,061	96	3.1344
87000	STAMPS COM INC	16,643	78	3.1640
13343	MRC GLOBAL INC	16,192	24	-0.9632
42439	HNI CORP	16,106	12	0.0446
11884	INTERMEDIATE PARFUMS INC	16,038	18	3.6086
88467	SOHU COM INC	15,482	12	1.8388
84438	SUN HYDRAULICS CORP	15,388	12	1.4424
12758	US ECOLOGY INC	15,297	6	0.0808
83509	FTI CONSULTING INC	14,827	12	1.9108
90233	MOMENTA PHARMACEUT. INC	14,244	18	-0.1665
14816	TOOTSIE ROLLS INDS INC	14,127	12	-0.4158
90440	NEENAH PAPER INC	14,006	12	0.8013
81294	WD 40 CO	13,844	36	1.3812

10606	WATTS WATER TECH. INC	13,709	66	0.6884
79248	GENTHERM INC	13,644	18	0.6542
10866	CALERES INC	13,343	12	2.3680
20512	CACI INTERNATIONAL INC	12,897	12	1.3668
86489	SELECT COMFORT CORP	12,631	12	-1.3093
42059	WEIS MARKETS INC	12,591	6	-1.4557
76224	BENCHMARK ELECTRONICS INC	12,498	48	1.1427
89915	MCGRATH RENTCORP	12,438	18	2.5937
58334	NORTHWEST NATURAL GAS CO	12,408	12	0.6909
83422	SYKES ENTERPRISES INC	12,357	6	-2.3296
16555	UNIVERSAL CORPORATION	12,334	12	2.2492
15824	INSTRUCTURE INC	12,236	18	1.6703
50550	TUTOR PERINI CORP	11,889	12	-2.8508
62033	RAVEN INDUSTRIES INC	11,357	36	0.9097
51692	PIER 1 IMPORTS INC DE	11,322	12	5.7520
92587	BIOTELEMETRY INC	11,265	12	2.9770
10860	ORASURE TECHNOLOGIES INC	11,247	12	0.3374
10318	BALCHEM CORP	10,977	24	0.5520
77595	ARCBEST CORP	10,905	6	-3.9124
16186	TACTILE SYSTEMS TECH. INC	10,869	6	-0.4579
13316	VOCERA COMMUNICATIONS INC	10,775	6	4.9260
10966	AXOGEN INC	10,454	12	10.0670
81241	BROOKS AUTOMATION INC	10,290	60	3.3926
64929	QUAKER CHEMICAL CORP	9,786	12	2.1107
93372	DOUGLAS DYNAMICS INC	9,661	6	-4.3762
91186	VANDA PHARMACEUT. INC	9,093	18	3.6196
83799	STRATEGIC EDUCATION INC	8,880	90	0.6570
87268	CIRCOR INTERNATIONAL INC	8,713	60	1.2136
91658	ALTRA IND. MOTION CORP	8,630	90	0.6599
11664	GREEN DOT CORP	8,613	12	0.9459
88568	SPARTANNASH CO	8,611	12	1.2588
86026	INNOSPEC INC	8,163	36	5.3627
44768	INTERFACE INC	8,096	12	-2.1428
12497	ASSEMBLY BIOSCIENCES INC	7,956	12	7,6833
14688	AMPHASTAR PHARMACEUT. INC	7,909	12	1.2627
44274	AEGION CORP	7,784	48	0.5590
12226	MGP INGREDIENTS INC	7,669	12	3.3355
86822	EXTREME NETWORKS INC	7,589	42	1.1722
84210	FORRESTER RESEARCH INC	7,583	12	0.8211
14422	CARA THERAPEUTICS INC	7,307	6	-4.7286
92035	CLEAN ENERGY FUELS CORP	7,085	54	-0.7755
15795	SURGERY PARTNERS INC	7,063	6	-5.4129
89824	PROVIDENCE SERVICE CORP	6,659	24	0.8332
35991	ROGERS CORP	6,596	12	-0.9167
14045	LINDBLAD EXP. HLDS INC	6,330	6	0.5400
47715	KIMBALL INTERNATIONAL INC	6,305	18	-0.5796
88841	RESOURCES CONNECTION INC	6,193	24	0.3954
84010	USANA HEALTH SCIENCES INC	6,021	12	-0.7922
90871	RUTHS HOSPITALITY GROUP INC	5,632	12	0.3285

78915	UNIVERSAL ELECTRONICS INC	5,326	72	2.5701
91365	CARDIOVASC. SYSTEMS INC DEL	5,217	24	1.2973
15847	KURA ONCOLOGY INC	5,136	18	4.1062
71985	SPARTAN MOTORS INC	4,625	18	1.2019
14433	DEL TACO RESTAURANTS INC	4,382	6	-5.6092
51086	WINNEBAGO INDUSTRIES INC	4,058	24	0.8422
47511	ENNIS INC	4,039	24	0.6670
85972	CRA INTERNATIONAL INC	3,969	6	-2.0862
90081	CUTERA INC	3,807	20	13.3253
85768	IES HOLDINGS INC	3,800	6	-0.9683
85419	CAPITAL SENIOR LIIVING CORP	3,451	18	-3.7794
75326	ARCH COAL INC	3,422	12	-14.5645
92097	LIMELIGHT NETWORKS INC	3,420	72	2.0172
61146	PAR TECHNOLOGY CORP	3,396	6	5.1725
82176	CRAFT BREW ALLIANCE INC	3,353	6	-5.5481
10355	DAILY JOURNAL CORP	3,271	6	0.2821
47861	SUPER. GROUP OF COMP. INC	2,861	6	-2.3016
27909	CULP INC	2,852	6	-4.0077
91363	PGT INC	2,823	36	5.1908
90464	SPOK HOLDINGS INC	2,823	6	-1.6237
90012	PETMED EXPRESS INC	2,711	36	0.1515
16066	PULSE BIOSCIENCES INC	2,293	6	-4.3168
63132	DUCOMMUN INC DE	2,265	12	2.0409
79307	SHILOH INDUSTRIES INC	1,997	20	-5.7257
85464	CASELLA WASTE SYSTEMS INC	1,842	24	-0.3853
92089	BIOFUEL ENERGY CORP	1,549	42	0.3756
84737	GULF ISLAND FABRICATION INC	1,291	12	-3.3720
88620	VERMILLON INC	881	102	2.3432
90955	STRATA SKIN SCIENCES INC	832	6	6.2655
87162	1 800 FLOWERS COM INC	689	12	4.6703
16528	POLAR POWER INC	570	6	-3.2334
65270	RCM TECHNOLOGIES INC	516	9	-7.7990

E Descriptive Statistics and Correlations

Table 11: Descriptive Statistics and Correlations Time-Series Regressions 2004-2018

This table reports descriptive statistics and correlations for the time-series factor regressions from July 2004 throughout 2018. We report the total number of observations (N), the minimum value (Min), the 5^{th} percentile (5^{th}), the 25^{th} percentile (25^{th}), the median (Median), the 75^{th} percentile (75^{th}), the 95^{th} percentile (95^{th}), the maximum value (Max), the standard deviation (Std), the skew (Skew) and the excess kurtosis (Kurt). The top half of the table reports descriptive statistics for our main portfolios of interest and the Fama-French 5-factors. The lower half of the table reports averages of the annual cross-sectional Pearson product-moment and Spearman rank-correlations between pairs of factors. Below-diagonal entries present the average Pearson product-moment correlations. Above diagonal entries present the average Spearman rank correlation. $(ESG_{low} - ESG_{high})$ is a value-weighted zero investment portfolio long the 10% highest rated ESG-stocks and short the highest rated ESG-stocks. $ESG_{high} - Rf$ is the return from a value-weighted portfolio long the 10% highest rated-ESG stocks and $ESG_{low} - Rf$ is the return from a value-weighted portfolio long the 10% lowest-rated ESG stocks. MKT is the excess market return, with RF being the one month t-bill rate. SMB is the average return of nine small stock portfolios minus the average return on nine big stock portfolios. HML is the average return of two value portfolios minus two growth portfolios. RMW is the average return on two robust operating portfolio minus the average return on two weak operating profit portfolios. CMA is the average return on two conservative investment portfolios minus the average return on two aggressive investment portfolios.

Description	N	Min	5^{th}	25^{th}	Median	75^{th}	95^{th}	Max	Mean	Std	Skew	Kurt
$ESG_{low} - ESG_{high}$	174	-0.099	-0.040	-0.014	0.002	0.018	0.055	0.115	0.003	0.030	0.029	1.557
$ESG_{high} - Rf$	174	-0.162	-0.072	-0.016	0.011	0.029	0.066	0.154	0.005	0.043	-0.378	1.806
$ESG_{low} - Rf$	174	-0.226	-0.067	-0.015	0.011	0.036	0.071	0.142	0.008	0.046	-0.878	4.157
MKT	174	-0.172	-0.076	-0.015	0.011	0.032	0.065	0.114	0.006	0.041	-0.759	1.977
SMB	174	-0.048	-0.038	-0.016	0.000	0.014	0.037	0.068	0.000	0.024	0.301	-0.147
HML	174	-0.112	-0.034	-0.014	-0.002	0.011	0.039	0.083	-0.000	0.025	0.004	2.596
RMW	174	-0.040	-0.020	-0.007	0.002	0.011	0.031	0.051	0.003	0.016	0.276	0.504
CMA	174	-0.033	-0.022	-0.010	-0.000	0.009	0.023	0.037	-0.000	0.014	0.260	-0.170

Correlations	$ESG_{LMH,10\%}$	$ESG_{high\,10\%}$	$ESG_{low\,10\%}$	MKT	SMB	HML	RMW	CMA
$ESG_{low} - ESG_{high}$	1	-0.377	0.421	0.005	0.083	-0.165	0.005	-0.270
$ESG_{high} - Rf$	-0.335	1	0.532	0.748	0.276	0.173	-0.282	0.105
$ESG_{low} - Rf$	0.401	0.668	1	0.665	0.313	0.048	-0.223	-0.060
MKT	-0.063	0.860	0.736	1	0.391	0.048	-0.395	-0.004
SMB	0.118	0.367	0.436	0.438	1	0.118	-0.439	-0.004
HML	-0.015	0.099	0.096	0.036	0.138	1	-0.046	0.361
RMW	0.023	-0.303	-0.248	-0.395	-0.471	-0.043	1	0.028
CMA	-0.182	0.015	-0.084	-0.044	-0.003	0.423	-0.003	1

Table 12: Descriptive Statistics Cross-sectional Returns Regressions

This table reports descriptive statistics for the cross-sectional Returns Regressions. We report the total number of observations (N), the minimum value (Min), the 5^{th} percentile (5^{th}), the 25^{th} percentile (25^{th}), the median (Median), the 75^{th} percentile (75^{th}), the 95^{th} percentile (95^{th}), the maximum value (Max), the standard deviation (Std), the skew (Skew) and the excess kurtosis (Kurt). $(RET - RF)_{t+1}$ is the monthly excess return of stock in period $t+1$. $(RET_{ex} - RF)_{t+1}$ is the monthly excess return of stocks in period $t+1$, net of the returns on the three days surrounding announcement dates. $LOGSIZE1$ is the logarithm of the monthly market capitalization. $BETA1$ is the 36-month rolling company beta. $LOGMB1$ is the logarithm of the market-book ratio. RET is the return of company i in month t, $LOGTURN1$ is the logarithm of average daily share turnover calculated on a 12-month rolling basis. $LOGAGE$ is the logarithm of the company age. $BLEV$ is the debt-asset ratio. $AVGMRET1$ is the average 12 month-rolling return. The first subsample is our main period if interest, 2010-2018. The full sample is from 2004-2018.

2010-2018	N	Min	5^{th}	25^{th}	Median	75^{th}	95^{th}	Max	Mean	Std	Skew	Kurt
$(RET - RF)_{t+1}$	257,886	-0.486	-0.196	-0.059	0.005	0.067	0.220	0.807	0.009	0.137	0.878	5.672
$(RET_{ex} - RF)_{t+1}$	257,886	-0.478	-0.176	-0.052	0.005	0.061	0.198	0.778	0.009	0.126	0.943	6.707
$LOGSIZE1$	257,886	6.816	9.837	11.894	13.490	14.934	17.001	18.094	13.425	2.146	-0.030	-0.521
$BETA1$	240,747	-1.272	0.086	0.712	1.166	1.670	2.714	4.701	1.243	0.830	0.738	1.928
$LOGMB1$	257,886	-2.148	-0.700	0.218	0.789	1.429	2.642	4.356	0.856	1.020	0.371	0.977
$RETADJ1$	257,886	-0.484	-0.194	-0.058	0.005	0.067	0.220	0.807	0.009	0.136	0.894	5.683
$AVGMRET1$	257,886	-0.312	-0.054	-0.008	0.011	0.030	0.070	0.336	0.010	0.386	-0.178	3.354
$LOGTURN1$	257,850	-9.036	-6.651	-5.527	-4.971	-4.462	-3.662	-3.077	-5.034	0.880	-0.424	0.412
$LOGAGE$	257,886	0.000	1.386	2.303	2.890	3.434	4.094	4.127	2.821	0.857	-0.470	-0.345
$BLEV1$	257,224	0.035	0.118	0.305	0.483	0.648	0.863	1.056	0.482	0.228	0.126	-0.654
2004-2018	N	Min	5^{th}	25^{th}	Median	75^{th}	95^{th}	Max	Mean	Std	Skew	Kurt
$(RET - RF)_{t+1}$	481,405	-0.488	-0.215	-0.066	0.002	0.068	0.235	0.807	0.006	0.147	0.882	5.176
$(RET_{ex} - RF)_{t+1}$	481,405	-0.481	-0.196	-0.059	0.002	0.063	0.213	0.778	0.006	0.136	0.902	5.895
$LOGSIZE1$	481,405	6.816	9.727	11.659	13.185	14.641	16.752	18.094	13.180	2.112	0.054	-0.445
$BETA1$	449,209	-1.272	0.087	0.714	1.196	1.767	3.033	4.700	1.315	0.922	0.880	1.720
$LOGMB1$	481,405	-2.148	-0.730	0.206	0.775	1.394	2.533	4.356	0.823	0.999	0.298	1.027
$RETADJ1$	481,405	-0.484	-0.212	-0.064	0.004	0.070	0.236	0.807	0.008	0.146	0.887	5.182
$AVGMRET$	481,405	-0.380	-0.062	-0.012	0.010	0.030	0.075	0.390	0.009	0.042	-0.068	3.018
$LOGTURN1$	481,329	-9.036	-6.766	-5.598	-4.976	-4.449	-3.671	-3.077	-5.066	0.918	-0.465	0.245
$LOGAGE$	481,405	0.000	1.386	2.197	2.773	3.401	4.025	4.127	2.749	0.841	-0.350	-0.356
$BLEV1$	481,402	0.035	0.116	0.291	0.469	0.635	0.850	1.056	0.470	0.226	0.168	-0.656

Table 13: Correlations Cross-sectional Returns Regressions

This table represents the time-series averages of the annual cross-sectional Pearson product-moment and Spearman rank correlations between pairs of variables for our cross-sectional returns regressions. The Pearson product-moment correlations are presented below the diagonal, and the Spearman rank correlations are presented above the diagonal. The first sub-sample is our period of interest, 2010-2018. The second is the full sample from 2004-2018. $(RET - RF)_{t+1}$ is the monthly excess return of stock in period $t+1$. $(RET_{ex} - RF)_{t+1}$ is the monthly excess return of stocks in period $t+1$, net of the returns on the three days surrounding announcement dates. $LOGSIZE1$ is the logarithm of the monthly market capitalization. $BETA1$ is the 36-month rolling company beta. $LOGMB1$ is the logarithm of the market-book ratio. RET is the return of company i in month t, $LOGTURN1$ is the logarithm of average daily share turnover calculated on a 12-month rolling basis. $LOGAGE$ is the logarithm of the company age. $BLEV$ is the debt-asset ratio. $AVGMRET1$ is the average 12 month-rolling return.

2010-2018	$(RET - RF)_{t+1}$	$(RET_{ex} - RF)_{t+1}$	LOGSIZE1	BETA1	LOGMB1	RETADJ1	LOGTURN	LOGAGE	BLEV	AVGMRET1
$(RET - RF)_{t+1}$	1	0.898	0.064	−0.022	0.015	−0.029	0.034	−0.012	0.013	0.008
$(RET_{ex} - RF)_{t+1}$	0.913	1	0.062	−0.020	0.017	−0.032	0.032	−0.006	0.013	0.007
$LOGSIZE1$	0.014	0.012	1	−0.017	0.383	0.112	0.295	0.398	0.272	0.184
$BETA1$	−0.014	−0.013	−0.030	1	−0.026	−0.019	−0.126	0.244	0.055	0.038
$LOGMB1$	−0.001	0.000	0.374	−0.032	1	0.128	−0.077	0.174	0.091	0.345
$RETADJ1$	−0.025	−0.025	0.072	−0.004	0.124	1	0.032	−0.004	0.014	0.267
$LOGAGE$	0.015	0.013	0.294	−0.128	−0.067	0.013	1	−0.106	0.139	0.024
$LOGTURN1$	−0.024	−0.019	0.374	0.251	0.162	−0.007	−0.092	1	0.129	0.029
$BLEV1$	0.001	0.000	0.248	0.076	0.135	0.002	0.129	0.126	1	0.023
$AVGMRET1$	0.006	0.005	0.205	0.027	0.360	0.298	0.040	0.019	0.010	1
2004-2018	$(RET - RF)_{t+1}$	$(RET_{ex} - RF)_{t+1}$	LOGSIZE1	BETA1	LOGMB1	RETADJ1	LOGTURN	LOGAGE	BLEV	AVGMRET1
$(RET - RF)_{t+1}$	1	0.903	0.057	−0.020	0.004	−0.0012	0.031	−0.008	0.016	0.002
$(RET_{ex} - RF)_{t+1}$	0.915	1	0.053	−0.017	0.005	−0.015	0.029	−0.003	0.013	0.000
$LOGSIZE1$	0.007	0.004	1	−0.042	0.364	0.113	0.284	0.418	0.251	0.191
$BETA1$	−0.008	−0.006	−0.055	1	−0.010	−0.025	−0.160	0.264	−0.006	−0.003
$LOGMB1$	−0.012	−0.010	0.355	−0.011	1	0.130	−0.080	0.196	0.054	0.362
$RETADJ1$	−0.012	−0.012	0.072	−0.006	0.129	1	0.031	−0.002	0.016	0.268
$LOGAGE1$	0.013	0.010	0.292	−0.160	−0.076	0.013	1	−0.105	0.171	0.035
$LOGTURN1$	−0.020	−0.015	0.393	0.267	0.182	−0.005	0.094	1	0.088	0.039
$BLEV1$	0.006	0.003	0.226	0.016	0.095	0.007	0.163	0.088	1	0.031
$AVGMRET$	−0.008	−0.010	0.205	−0.005	0.382	0.295	0.044	0.038	0.018	1

Table 14: Descriptive Statistics Institutional Ownership-Regressions

This table reports descriptive statistics for institutional ownership-regressions. We report the total number of observations (N), the minimum value (Min), the 5^{th} percentile (5^{th}), the 25^{th} percentile (25^{th}), the median (Median), the 75^{th} percentile (75^{th}), the 95^{th} percentile (95^{th}), the maximum value (Max), the standard deviation (Std), the skew (Skew) and the excess kurtosis (Kurt). The first sample is the period of interest from 2010-2018, the second is the full sample from 1980-2018. *IO* is the percent of institutional ownership for all companies. *LOGSIZE* is the logarithm of the market capitalization (reported in thousands $) of the company. *BETA* is the firm's industry beta. *LOGMB* is the logarithm of the market-to-book ratio. *LOGYIELD* is the logarithm of the yearly dividend ratio divided by the price at the end of the year. *LOGAGE* is the logarithm of the number of years the company has been listed at COMPUSTAT at the end of the year. *LOGSTDRET* is the daily stock return standard deviation during the past year. *AVGMRET* is the average monthly return during the past year. *LOGBB* is the logarithm of the buyback ratio of the company during the past year. *LOGTURN* is the logarithm of average daily share turnover during the past year. Variables have been winsorized at 0.5%.

2010-2018	N	Min	5^{th}	25^{th}	Median	75^{th}	95^{th}	Max	Mean	Std	Skew	Kurt
IO	23,479	0.000	0.004	0.324	0.720	0.895	1.031	1.500	0.616	0.343	-0.504	-0.999
LOGSIZE	23,479	6.971	9.762	11.863	13.468	14.906	16.978	18.094	13.393	2.160	-0.047	-0.503
BETA	23,298	0.623	0.729	0.837	0.960	1.138	1.352	1.686	1.019	0.205	0.629	-0.054
LOGMB	23,479	-1.668	-0.516	0.235	0.756	1.351	2.484	4.091	0.838	0.926	0.554	1.033
LOGYIELD	23,479	-9.210	-9.210	-9.210	-9.210	-4.351	-3.242	-2.253	-7.386	2.528	0.724	-1.362
LOGAGE	23,479	0.000	1.099	2.197	2.890	3.434	4.094	4.127	2.771	0.903	-0.507	-0.341
LOGPRINV	23,479	-4.973	-4.615	-3.747	-2.917	-1.747	-0.030	1.962	-2.667	1.417	0.654	-0.083
LOGSTDRET	23,478	-4.878	-4.439	-3.997	-3.667	-3.320	-2.792	-1.761	-3.646	0.504	0.318	0.208
AVGMRET	23,479	-0.166	-0.064	-0.011	0.010	0.029	0.071	0.235	0.008	0.043	0.064	3.513
LOGBB	23,477	-9.210	-9.210	-9.210	-9.210	-9.210	-4.614	-2.861	-8.680	1.448	2.641	5.603
LOGTURN	23,469	-8.777	-6.646	-5.518	-4.961	-4.452	-3.650	-3.077	-5.025	0.881	-0.423	0.404
LOGBREADTH	22,961	-7.371	-6.471	-4.462	-3.441	-2.820	-1.771	-0.688	-3.711	1.393	-0.682	0.200
1980-2018	N	Min	5^{th}	25^{th}	Median	75^{th}	95^{th}	Max	Mean	Std	Skew	Kurt
IO	137,028	0.000	0.000	0.095	0.335	0.652	0.947	1.500	0.391	0.320	0.471	-0.936
LOGSIZE	137,028	6.816	8.279	10.216	11.836	13.558	15.880	18.094	11.924	2.319	0.186	-0.417
BETA	136,207	0.596	0.781	0.876	0.985	1.207	1.390	1.846	1.046	0.215	0.722	0.774
LOGMB	137,028	-1.668	-0.709	0.043	0.592	1.215	2.356	4.091	0.677	0.945	0.593	0.910
LOGYIELD	137,028	-9.210	-9.210	-9.210	-9.210	-4.382	-3.002	-2.253	-7.444	2.565	0.831	-1.184
LOGAGE	137,028	0.000	0.693	1.609	2.485	3.178	3.829	4.127	2.382	0.989	-0.414	-0.463
LOGPRINV	137,028	-4.973	-4.093	-3.257	-2.463	-1.386	0.375	1.962	-2.233	1.373	0.678	0.157
LOGSTDRET	137,027	-4.878	-4.363	-3.851	-3.462	-3.065	-2.470	-1.761	-3.447	0.574	0.159	-0.169
AVGMRET	137,028	-0.166	-0.070	-0.014	0.011	0.035	0.094	0.235	0.011	0.051	0.417	2.914
LOGBB	137,017	-9.210	-9.210	-9.210	-9.210	-9.210	-4.717	-2.861	-8.761	1.386	3.051	8.019
LOGTURN	136,988	-9.210	-7.667	-6.440	-5.675	-4.932	-3.994	-3.077	-5.734	1.144	-0.451	0.424
LOGBREADTH	130,561	-7.371	-6.406	-4.971	-3.797	-2.891	-1.684	-0.688	-3.926	1.434	-0.174	-0.547

Table 15: Correlations Institutional Ownership Regressions

This table represents the time-series averages of the annual cross-sectional Pearson product-moment and Spearman rank correlations between pairs of variables for our pooled institutional ownership regressions. The Pearson product-moment correlations are presented below the diagonal, and the Spearman rank correlations are presented above the diagonal. In the first sample, we present correlations for 2010-2018, representing our period of interest, and in the second sample we present the same variables for the full sample 1980-2018. Spearman rank correlation calculations are done on the raw data set, while the Pearson-correlations are calculated using a set winsorized on the 0.5% level.

2010-2018	IO	LOGSIZE	BETA	LOGPRINV	LOGMB	LOGSTDRET	AVGMRET	LOGYIELD	LOGAGE	LOGTURN	LOGBB	LOGBREADTH
IO	1	0.592	0.101	0.137	0.127	0.093	-0.577	-0.407	0.124	0.073	0.390	0.705
LOGSIZE	0.614	1	-0.019	0.291	0.403	0.295	-0.829	-0.674	0.223	0.057	0.367	0.907
BETA	0.073	-0.030	1	-0.133	0.033	0.126	-0.037	-0.056	0.003	0.046	-0.042	0.025
LOGMB	0.124	0.277	-0.133	1	-0.025	-0.142	-0.272	-0.076	-0.011	0.032	0.178	0.230
LOGYIELD	0.183	0.417	0.051	-0.022	1	0.460	-0.414	-0.550	0.024	0.013	-0.066	0.396
LOGAGE	0.137	0.285	0.123	-0.140	0.442	1	-0.318	-0.440	0.044	0.019	-0.107	0.316
LOGPRINV	-0.637	-0.818	-0.039	-0.225	-0.421	-0.297	1	0.708	-0.302	-0.065	-0.199	-0.755
LOGSTDRET	-0.450	-0.677	-0.038	-0.063	-0.539	-0.432	0.705	1	-0.102	-0.092	0.131	-0.635
AVGMRET	0.130	0.220	0.001	-0.026	0.030	0.053	-0.324	-0.061	1	-0.026	0.026	0.162
LOGBB	0.087	0.072	0.027	0.022	0.007	0.024	-0.080	-0.096	-0.017	1	0.007	0.070
LOGTURN	0.372	0.344	-0.043	0.166	-0.050	-0.090	-0.207	0.137	0.035	0.017	1	0.382
LOGBREADTH	0.777	0.857	0.020	0.199	0.385	0.290	-0.731	-0.617	0.152	0.084	0.334	1
1980-2018	IO	LOGSIZE	BETA	LOGPRINV	LOGMB	LOGSTDRET	AVGMRET	LOGYIELD	LOGAGE	LOGTURN	LOGBB	
IO	1	0.691	0.068	0.077	0.258	0.239	-0.656	-0.479	0.103	0.056	0.378	0.791
LOGSIZE	0.669	1	-0.043	0.232	0.432	0.343	-0.835	-0.620	0.208	0.039	0.338	0.933
BETA	0.057	-0.043	1	-0.102	-0.023	0.066	0.007	0.010	-0.007	0.021	0.000	-0.014
LOGMB	0.054	0.203	-0.103	1	-0.119	-0.213	-0.172	0.043	-0.079	-0.004	0.229	0.170
LOGYIELD	0.269	0.445	0.008	-0.114	1	0.506	-0.471	-0.580	0.023	0.036	-0.117	0.421
LOGAGE	0.231	0.333	0.072	-0.225	0.490	1	-0.366	-0.452	0.040	0.032	-0.093	0.365
LOGPRINV	-0.643	-0.810	-0.011	-0.119	-0.461	-0.332	1	0.701	-0.311	-0.045	-0.201	-0.764
LOGSTDRET	-0.458	-0.613	0.009	0.054	-0.564	-0.432	0.696	1	-0.078	-0.074	0.148	-0.583
AVGMRET	0.085	0.188	-0.004	-0.092	0.023	0.033	-0.309	-0.037	1	-0.036	0.061	0.119
LOGBB	0.056	0.041	0.013	-0.012	0.030	0.029	-0.050	-0.069	-0.027	1	-0.007	0.048
LOGTURN	0.375	0.321	-0.009	0.204	-0.094	-0.088	-0.216	0.145	0.071	0.001	1	0.390
LOGBREADTH	0.784	0.913	-0.013	0.131	0.420	0.342	-0.730	-0.563	0.091	0.049	0.377	1

F Additional Regression Results

Table 16: Time-Series Regressions - Additional Portfolios, 10%

Results from time-series regressions of value-weighted and equal-weighted portfolios long the bottom-rated 10% ESG companies. $ESG_{low} - ESG_{high}$ is a portfolio long the 10% lowest-rated ESG companies and short the 10% top-rated ESG companies. $ESG_{low} - Rf$ is a portfolio long the 10% lowest-rated ESG companies less the risk-free rate. $ESG_{high} - Rf$ is a portfolio long the 10% highest-rated ESG companies less the risk-free rate. Portfolios changes each July based on ESG-ratings in year t. MKT is the excess market return. SMB is the return of a portfolio long small stocks and short large stocks. HML is the return of a portfolio long high book-to-market stocks and short low book-to-market stocks, RMW is the return of a portfolio long the most profitable companies and short the least profitable companies. CMA is the returns of a portfolio long conservative investment companies and short aggressive investment companies. MOM is a portfolio long high momentum stocks and short low momentum stocks. Standard errors are adjusted for serial correlations using the Newey West correction. ***1% significance; **5% significance; *10% significance.

2010-2018, equal-weighted	ALPHA	MKT	SMB	HML	RMW	CMA
$ESG_{low} - ESG_{high}$	0.0034*	0.0488	-0.0023	0.0209	-0.1099	-0.2299
	(0.002)	(0.052)	(0.089)	(0.089)	(0.139)	(0.145)
$ESG_{low} - Rf$	0.0027	1.0604***	0.6486***	0.0435	0.1516	0.0195
	(0.002)	(0.045)	(0.085)	(0.077)	(0.123)	(0.115)
$ESG_{high} - Rf$	-0.0008	1.0116***	0.6509***	0.0226	0.2615***	0.2495**
	(0.001)	(0.031)	(0.049)	(0.065)	(0.086)	(0.107)
2004-2018, value-weighted	ALPHA	MKT	SMB	HML	RMW	CMA
$ESG_{low} - ESG_{high}$	0.0026	-0.0403	0.2041	0.0636	0.1267	-0.3850**
	(0.002)	(0.105)	(0.134)	(0.146)	(0.156)	(0.195)
$ESG_{low} - Rf$	0.0012	0.9397***	0.2199*	0.0618	0.2695**	-0.2329
	(0.002)	(0.088)	(0.120)	(0.108)	(0.123)	(0.150)
$ESG_{high} - Rf$	-0.0014	0.9800***	0.0158	-0.0018	0.1428	0.1521
	(0.001)	(0.037)	(0.076)	(0.056)	(0.106)	(0.124)
2004-2018, equal-weighted	ALPHA	MKT	SMB	HML	RMW	CMA
$ESG_{low} - ESG_{high}$	0.0022	-0.0424	0.2340**	-0.2220*	0.1879	0.1566
	(0.002)	(0.064)	(0.103)	(0.127)	(0.163)	(0.216)
$ESG_{low} - Rf$	0.0030*	1.0491***	0.8240***	0.0886	0.3396***	0.0123
	(0.002)	(0.042)	(0.085)	(0.095)	(0.115)	(0.147)
$ESG_{high} - Rf$	0.0008	1.0915***	0.5899***	0.3106***	0.1517	-0.1443**
	(0.001)	(0.061)	(0.097)	(0.102)	(0.148)	(0.121)
2010-2018, value-weighted	ALPHA	MKT	SMB	HML	MOM	
$ESG_{low} - ESG_{high}$	0.0051**	-0.1927**	0.0697	0.0131	0.0582	
	(0.002)	(0.089)	(0.123)	(0.141)	(0.095)	
$ESG_{low} - Rf$	0.0045**	0.7358***	0.1279	0.0660	0.0219	
	(0.002)	(0.077)	(0.091)	(0.101)	(0.065)	
$ESG_{high} - Rf$	-0.0006	0.9285***	0.0582	0.0528	-0.0363	
	(0.001)	(0.047)	(0.068)	(0.079)	(0.063)	

Table 17: Fama Macbeth - Additional Regressions

This table reports results from Fama and Macbeth (1973) cross-sectional regressions for the period 2010-2018 and 2004-2018 on the monthly return of stocks net of the risk-free rate on the lagged values of a set of well-known predictors of stock returns. $ESGDUM_{high}$ is a dummy variable which equals one if the company has an ESG-rating amongst the top 10% and $ESGDUM_{low}$ is a dummy which equals one if the company has an ESG-rating amongst the bottom 10% of companies in year t, with ranking being registered starting from July each year. $BETA1$ is the 36-month rolling company beta. $LOGMB1$ is the logarithm of the market-book ratio. $RETADJ1$ is the monthly return of the company adjusted for delisting returns. $AVGMRET1$ is the average 12-month return. $LOGTURN1$ is the logarithm of average daily share turnover, during the past year. $LOGAGE$ is the logarithm of the age of the company. $BLEV1$ is the book-leverage of the company. $LOGSIZE1$ is the logarithm of the market capitalization. In the final specification, returns surrounding the three days of all announcement date have been subtracted from the dependent variable. Standard errors are adjusted for serial correlation using standard errors as in Newey and West (1987). ***1% significance; **5% significance; *10% significance.

2010-2018	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$ESGDUM_{high}$	0.0016	0.0016	0.0017	0.0018	0.0022	0.0011	0.0010	-0.0006
	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)
BETA1	-0.0018	-0.0019	-0.0022	-0.0022	-0.0014	-0.0013	-0.0013	-0.0012
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
LOGMB1		0.0008	0.0009	-0.0002	0.0003	0.0004	0.0005	-0.0007
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001))
RETADJ1			-0.0149**	-0.0206***	-0.0203***	-0.0209***	-0.0209***	-0.0221***
			(0.007)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
AVGMRET1				0.0887***	0.0864***	0.0836***	0.0810***	0.0704**
				(0.031)	(0.031)	(0.030)	(0.030)	(0.029)
LOGTURN1					-0.0034***	-0.0033***	-0.0033***	-0.0047***
					(0.001)	(0.001)	(0.001)	(0.001)
LOGAGE						0.0023**	0.0023**	0.0006
						(0.001)	(0.001)	(0.001)
BLEV1							0.0005	-0.0022
							(0.003)	(0.003)
LOGSIZE1								0.0019***
								(0.001)

2004-2018			
$ESGDUM_{high}$	-0.0006	$ESGDUM_{low}$	0.0034**
	(0.001)		(0.002)
BETA1	-0.0003	BETA1	-0.0003
	(0.001)		(0.001)
LOGMB1	-0.0014*	LOGMB1	-0.0015*
	(0.001)		(0.001)
RETADJ1	-0.0241***	RETADJ1	-0.0241***
	(0.005)		(0.005)
AVGMRET1	0.0428*	AVGMRET1	0.0428*
	(0.023)		(0.023)
LOGTURN1	-0.0033***	LOGTURN1	-0.0033***
	(0.001)		(0.001)
LOGAGE	0.0004	LOGAGE	0.0004
	(0.001)		(0.001)
BLEV1	-0.0005	BLEV1	-0.0005
	(0.002)		(0.002)
LOGSIZE1	0.0013***	LOGSIZE1	0.0013***
	(0.001)		(0.001)

Table 18: Institutional Ownership, 10% Highest Rated

This table reports summary statistics for the variables used for the eight sets of regressions. In the first six, the dependent variable is overall institutional ownership (IO), which is calculated at the end of each year. In regression (7) the dependent variable is the aggregate ownership of Thompson Reuters category owners (1),(2) and (5); banks, insurance companies and other. In regression (8) the dependent variable is owner types (3) and (4); mutual funds and independent investment advisors. $ESGDUM_{high}$ equals one if a stock is amongst the 10% highest rated ESG-companies and zero otherwise. $LOGSIZE$ is the logarithm of the market capitalization of the company. $BETA$ is the firms industry beta. $LOGMB$ is the logarithm of the market-to-book ratio. $LOGYIELD$ is the logarithm of the yearly dividend ratio divided by the price at the end of the year. $LOGAGE$ is the logarithm of the number of years the company has been listed at COMPUSTAT at the end of the year. $LOGPRINV$ is the logarithm of the inverse of the price at the end of the year. $LOGSTDRET$ is the daily stock return standard deviation during the past year. $AVGMRET$ is the average monthly return during the past year. $LOGBB$ is the logarithm of the buyback ratio of the company during the past year. $LOGTURN$ is the logarithm of average daily share turnover during the past year. $NASDAQ$ equals one if the company is listed on NASDAQ and zero otherwise. $S\&P500$ equals one if the company is on the S&P500-index and zero otherwise. These are the results of pooled OLS regressions with Moulton's (1986) standard errors, clustered at the 48-industry groupings. The ownership data covers the period 2010-2018. ***1% significance; **5% significance; *10% significance.

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$ESGDUM_{high}$	0.0066	0.0182	0.0289	0.0219	0.0082	0.0034	0.0126	-0.0091
	(0.022)	(0.022)	(0.021)	(0.024)	(0.019)	(0.020)	(0.014)	(0.008)
$LOGSIZE$	0.1263***			0.1317***	0.0864***	0.0919***	0.0654***	0.0259***
	(0.005)			(0.006)	(0.007)	(0.012)	(0.008)	(0.004)
$BETA$	0.1326***	0.0721**	0.1223**	0.1285***	0.1237**	0.1239***	0.0789**	0.0462***
	(0.042)	(0.035)	(0.053)	(0.044)	(0.050)	(0.048)	(0.034)	(0.016)
$LOGMB$		0.0028	0.0174**	-0.0178***		-0.0162**	-0.0154***	-0.0006
		(0.007)	(0.008)	(0.006)		(0.007)	(0.005)	(0.002)
$LOGYIELD$			-0.0085***	-0.0073***				
			(0.002)	(0.002)				
$LOGAGE$			-0.0040	-0.0005		-0.0071	-0.0000	-0.0074***
			(0.007)	(0.006)		(0.006)	(0.004)	(0.003)
$LOGPRINV$		-0.1574***						
		(0.005)						
$LOGSTDRET$			-0.3835***			-0.1427***	-0.0943***	-0.0502***
			(0.025)			(0.027)	(0.020)	(0.008)
$AVGMRET$					-0.0587	-0.2242***	-0.1968***	-0.0157
					(0.057)	(0.067)	(0.052)	(0.021)
$LOGBB$			0.0093***		0.0096***	0.0070***	0.0054***	0.0015***
			(0.002)		(0.002)	(0.002)	(0.001)	(0.001)
$LOGTURN$			0.1739***		0.0699***	0.0955***	0.0711***	0.0237***
			(0.006)		(0.011)	(0.013)	(0.009)	(0.004)
$NASDAQ$	0.0081			0.0069		0.0102	0.0075	0.0026
	(0.013)			(0.013)		(0.015)	(0.011)	(0.004)
$S\&P500$	-0.2892***	-0.0599***	-0.0918***	-0.2667***		-0.2666***	-0.1923***	-0.0717***
	(0.022)	(0.011)	(0.015)	(0.023)		(0.028)	(0.021)	(0.008)

Table 19: Institutional Ownership Industry Regressions: 1980-2009

This table reports summary statistics for regressions on different subsets of out-of-sample time periods. One is the maximum sample 1980-2009, then we do five-year intervals from 1995 and onnwards. The last interval spans over four years from 2015-2018. The dependent variable is overall institutional ownership (IO), which is calculated at the end of each year. $ESGINDDUM_{low}$ equals one if a stock is in a low-rated ESG rated industry (Soda, Fun, Coal, Fabricated Products or Smoke) and zero otherwise. $GDUM_{low}$ is a dummy variable which is one if the company resides in any of the industries included in $ESGINDDUM_{low}$ or their comparable industries (Beer, Toys, Oil, Steel or Food) and zero otherwise. *LOGSIZE* is the logarithm of the market capitalization of the company. *BETA* is the firms industry beta. *LOGMB* is the logarithm of the market-to-book ratio. *LOGYIELD* is the logarithm of the yearly dividend ratio divided by the price at the end of the year. *LOGAGE* is the logarithm of the number of years the company has been listed at COMPUSTAT at the end of the year. *LOGSTDRET* is the daily stock return standard deviation during the past year. *AVGMRET* is the average monthly return during the past year. *LOGBB* is the logarithm of the buyback ratio of the company during the past year. *LOGTURN* is the logarithm of average daily share turnover during the past year. *NASDAQ* equals one if the company is listed on NASDAQ and zero otherwise. *S&P500* equals one if the company is on the S&P500-index and zero otherwise. These are the results of pooled OLS regressions with Moulton's (1986) standard errors, clustered at the 48-industry groupings. The ownership data covers the period 2010-2018. ***1% significance; **5% significance; *10% significance.

Variable	1980-2009	1995-1999	2000-2004	2005-2009	2010-2014	2015-2018
$ESGINDDUM_{low}$	-0.0415*	-0.0666*	-0.0535	-0.0214	-0.0858**	-0.0890***
	(0.025)	(0.035)	(0.034)	(0.036)	(0.040)	(0.035)
$GDUM_{low}$	-0.0069	0.0055	-0.0128	-0.0584**	-0.0531***	-0.0033
	(0.017)	(0.022)	(0.021)	(0.024)	(0.018)	(0.016)
LOGSIZE	0.0873***	0.0813***	0.0818***	0.0933***	0.0897***	0.0935***
	(0.004)	(0.003)	(0.004)	(0.007)	(0.010)	(0.014)
BETA	0.0736*	0.0708*	0.1041**	0.0832	0.1622***	0.0905
	(0.038)	(0.040)	(0.050)	(0.054)	(0.051)	(0.056)
LOGMB	-0.0381***	-0.0423***	-0.0432***	-0.0570***	-0.0206***	-0.0194***
	(0.007)	(0.007)	(0.005)	(0.006)	(0.008)	(0.006)
LOGAGE	0.0115**	-0.0010	-0.0052	-0.0008	0.0007	-0.0143***
	(0.005)	(0.006)	(0.008)	(0.008)	(0.007)	(0.005)
LOGSTDRET	-0.0473***	-0.0804***	-0.1331***	-0.0823***	-0.1478***	-0.1519***
	(0.017)	(0.023)	(0.016)	(0.013)	(0.026)	(0.032)
AVGMRET	-0.5607***	-0.4295***	-0.4124***	-0.7760***	0.0355	-0.3011***
	(0.044)	(0.027)	(0.079)	(0.057)	(0.078)	(0.074)
LOGBB	0.0029*	0.0033**	0.0010	0.0099***	0.0082***	0.0046*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
LOGTURN	0.0781***	0.0674***	0.1045***	0.1276***	0.0886***	0.1026***
	(0.005)	(0.005)	(0.007)	(0.010)	(0.012)	(0.015)
NASDAQ	0.0213***	-0.0271***	-0.0241***	0.0082	0.0101	0.0000
	(0.005)	(0.007)	(0.008)	(0.009)	(0.014)	(0.016)
S&P500	-0.1073***	-0.0917***	-0.01554***	-0.2194***	-0.2516***	-0.2793***
	(0.018)	(0.016)	(0.016)	(0.021)	(0.025)	(0.035)

Table 20: Institutional Ownership Industry Regressions: Ex Sin Stocks

This table reports summary statistics for the variables used for the eight sets of regressions. In the first six, the dependent variable is overall institutional ownership (IO), which is calculated at the end of each year. In regression (7) the dependent variable is the aggregate ownership of Thompson Reuters category owners (1),(2) and (5); banks, insurance companies and other. In regression (8) the dependent variable is owner types (3) and (4); mutual funds and independent investment advisors. $ESGDUM_{lex}$ equals one if a stock is in the lowest-rated ESG industries, with exception of 'sin' industries, meaning it has to be in the Soda, Coal or Fabricated Products, and zero otherwise. $GDUM_{lex}$ is a dummy variable which is one if the company resides in any of the industries included in $ESGINDDUM_{lex}$ or their comparable industries (Beer, Oil or Steel) and zero otherwise. *LOGSIZE* is the logarithm of the market capitalization of the company. *BETA* is the firms industry beta. *LOGMB* is the logarithm of the market-to-book ratio. *LOGYIELD* is the logarithm of the yearly dividend ratio divided by the price at the end of the year. *LOGAGE* is the logarithm of the number of years the company has been listed at COMPUSTAT at the end of the year. *LOGPRINV* is the logarithm of the inverse of the price at the end of the year. *LOGSTDRET* is the daily stock return standard deviation during the past year. *AVGMRET* is the average monthly return during the past year. *LOGBB* is the logarithm of the buyback ratio of the company during the past year. *LOGTURN* is the logarithm of average daily share turnover during the past year. *NASDAQ* equals one if the company is listed on NASDAQ and zero otherwise. *S&P500* equals one if the company is on the S&P500-index and zero otherwise. These are the results of pooled OLS regressions with Moulton's (1986) standard errors, clustered at the 48-industry groupings. The ownership data covers the period 2010-2018. ***1% significance; **5% significance; *10% significance.

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$ESGINDDUM_{lex}$	-0.1306*	-0.1308*	-0.1311	-0.0935	-0.1071	-0.0958	-0.0668	-0.0286
	(0.070)	(0.068)	(0.041)	(0.070)	(0.087)	(0.073)	(0.048)	(0.026)
$GDUM_{lex}$		-0.0008	0.0031	-0.0429**	-0.0467***	-0.0381***	-0.0248**	-0.0141***
		(0.017)	(0.017)	(0.017)	(0.020)	(0.013)	(0.011)	(0.005)
LOGSIZE	0.1268***			0.1323***	0.1324***	0.0931***	0.0661***	0.0264***
	(0.005)			(0.006)	(0.006)	(0.012)	(0.008)	(0.004)
BETA	0.1342***	0.0728**	0.1199**	0.1170***	0.1505***	0.1118**	0.0719**	0.0408***
	(0.042)	(0.035)	(0.054)	(0.047)	(0.052)	(0.051)	(0.035)	(0.016)
LOGMB		-0.0009	0.0133*	-0.0213***		-0.0193***	-0.0174***	-0.0017
		(0.006)	(0.008)	(0.006)		(0.007)	(0.005)	(0.003)
LOGYIELD			-0.0075***	-0.0073***				
			(0.002)	(0.003)				
LOGAGE			-0.0035	0.0038		-0.0047	0.0024	-0.0069***
			(0.006)	(0.005)		(0.005)	(0.004)	(0.002)
LOGPRINV		-0.1597***						
		(0.005)						
LOGSTDRET			-0.3926***			-0.1405***	-0.0934***	-0.0486***
			(0.023)			(0.027)	(0.019)	(0.008)
AVGMRET					-0.0304	-0.2071***	-0.1768***	-0.0194
					(0.057)	(0.067)	(0.049)	(0.024)
LOGBB			0.0069***		0.0090***	0.0069***	0.0053***	0.0015***
			(0.002)		(0.002)	(0.002)	(0.001)	(0.001)
LOGTURN			0.1748***		0.0694***	0.0953***	0.0707***	0.0239***
			(0.006)		(0.011)	(0.013)	(0.009)	(0.004)
NASDAQ	0.0047			0.0026		0.0057	0.0044	0.0016
	(0.013)			(0.013)		(0.014)	(0.011)	(0.004)
S&P500	-0.2875***	-0.0573***	-0.0901***	-0.2849***		-0.2684***	-0.1935***	-0.0721***
	(0.021)	(0.010)	(0.015)	(0.022)		(0.028)	(0.020)	(0.009)

Table 21: Time-Series Regressions - Different Breakpoints

Results from time-series regressions of value-weighted and equal-weighted portfolios long the bottom-rated 10% ESG companies. $ESG_{low} - ESG_{high\,x\%}$ is a portfolio long the x% lowest-rated ESG companies and short the x% top-rated ESG companies, where x is either 2.5, 5 or 20%. $ESG_{low} - Rf_{x\%}$ is a portfolio long the x% lowest-rated ESG companies less the risk-free rate. $ESG_{high} - Rf_{x\%}$ is a portfolio long the x% highest-rated ESG companies less the risk-free rate. Portfolios changes each July based on ESG-ratings in year t. MKT is the excess market return. SMB is the return of a portfolio long small stocks and short large stocks. HML is the return of a portfolio long high book-to-market stocks and short low book-to-market stocks, RMW is the return of a portfolio long the most profitable companies and short the least profitable companies. CMA is the returns of a portfolio long conservative investment companies and short aggressive investment companies. Standard errors are adjusted for serial correlations using the Newey West correction. ***1% significance; **5% significance; *10% significance.

2010-2018, value-weighted	ALPHA	MKT	SMB	HML	RMW	CMA
$ESG_{low} - ESG_{high\,2.5\%}$	0.0085**	-0.2033*	0.3437***	-0.4569	0.2208	0.2256
	(0.004)	(0.107)	(0.123)	(0.294)	(0.271)	(0.367)
$ESG_{low} - ESG_{high\,5\%}$	0.0086***	-0.1660**	0.4212***	-0.3252	0.1487**	0.1933
	(0.003)	(0.078)	(0.112)	(0.211)	(0.166)	(0.273)
$ESG_{low} - ESG_{high\,20\%}$	0.0029**	-0.1466**	0.0129	-0.0104	0.0677	-0.2772*
	(0.001)	(0.058)	(0.107)	(0.099)	(0.125)	(0.155)
2010-2018, equal-weighted	ALPHA	MKT	SMB	HML	RMW	CMA
$ESG_{low} - ESG_{high\,2.5\%}$	0.0048	0.0473	0.1124	-0.1915	0.1542	-0.1657
	(0.004)	(0.097)	(0.169)	(0.202)	(0.348)	(0.382)
$ESG_{low} - ESG_{high\,5\%}$	0.0049*	0.0698	-0.0097	-0.0115	-0.1792	-0.4055*
	(0.003)	(0.076)	(0.113)	(0.127)	(0.211)	(0.236)
$ESG_{low} - ESG_{high\,20\%}$	0.0009	0.0817**	-0.1001	-0.0314	-0.1564	-0.2068*
	(0.001)	(0.038)	(0.077)	(0.066)	(0.116)	(0.111)
2010-2018, value-weighted	ALPHA	MKT	SMB	HML	RMW	CMA
$ESG_{low} - Rf_{2.5\%}$	0.0054	0.8070***	0.3973***	-0.3431*	0.2519	0.5466*
	(0.004)	(0.115)	(0.139)	(0.184)	(0.242)	(0.315)
$ESG_{low} - Rf_{5\%}$	0.0064**	0.7912***	0.4222***	-0.3230*	0.1905	0.5747**
	(0.003)	(0.093)	(0.118)	(0.171)	(0.175)	(0.254)
$ESG_{low} - Rf_{20\%}$	0.0011	0.8186***	0.1283	-0.1636**	0.2865***	0.2573**
	(0.001)	(0.052)	(0.081)	(0.073)	(0.090)	(0.116)
$ESG_{high} - Rf_{2.5\%}$	-0.0031	1.0104***	0.0226	0.1138	0.0312	0.3210
	(0.003)	(0.091)	(0.100)	(0.197)	(0.168)	(0.254)
$ESG_{high} - Rf_{5\%}$	-0.0022	0.9572***	0.0010	0.0022	0.0419	0.3813***
	(0.002)	(0.050)	(0.076)	(0.094)	(0.127)	(0.149)
$ESG_{high} - Rf_{20\%}$	-0.0018**	0.9652***	0.1155**	-0.1155**	0.2188***	0.5345***
	(0.001)	(0.033)	(0.054)	(0.052)	(0.073)	(0.085)
2010-2018, equal-weighted	ALPHA	MKT	SMB	HML	RMW	CMA
$ESG_{low} - Rf_{2.5\%}$	0.0054*	0.9643***	0.7726***	-0.0739	0.1186	0.0921
	(0.003)	(0.097)	(0.148)	(0.162)	(0.229)	(0.244)
$ESG_{high} - Rf_{5\%}$	0.0042	1.0203***	0.6757***	0.0536	0.0723	-0.0401
	(0.003)	(0.055)	(0.101)	(0.101)	(0.139)	(0.127)
$ESG_{low} - Rf_{20\%}$	0.0015	1.0944***	0.5552***	-0.0004	0.0610	0.0789
	(0.001)	(0.028)	(0.072)	(0.082)	(0.120)	(0.097)
$ESG_{high} - Rf_{2.5\%}$	0.0006	0.9171***	0.6602***	0.1176	-0.0356	0.2578
	(0.002)	(0.088)	(0.122)	(0.122)	(0.190)	(0.235)
$ESG_{high} - Rf_{5\%}$	-0.0007	0.9505***	0.6854***	0.0651	0.2515**	0.3655**
	(0.001)	(0.060)	(0.080)	(0.099)	(0.113)	(0.175)
$ESG_{high} - Rf_{20\%}$	0.0006	1.0127***	0.6554***	0.0309	0.2174***	0.2858***
	(0.001)	(0.025)	(0.033)	(0.051)	(0.064)	(0.092)

Table 22: Time-Series Regressions - Portfolio Formation Timing, 10%

Results from time-series regressions of value-weighted and equal-weighted portfolios long the bottom-rated 10% ESG companies. $ESG_{low} - ESG_{high}$ is a portfolio long the 10% lowest-rated ESG companies and short the 10% top-rated ESG companies. $ESG_{low} - Rf$ is a portfolio long the 10% lowest-rated ESG companies less the risk-free rate. $ESG_{high} - Rf$ is a portfolio long the 10% highest-rated ESG companies less the risk-free rate. Portfolios changes each January or December based on ESG-ratings in year t. MKT is the excess market return. SMB is the return of a portfolio long small stocks and short large stocks. HML is the return of a portfolio long high book-to-market stocks and short low book-to-market stocks, RMW is the return of a portfolio long the most profitable companies and short the least profitable companies. CMA is the returns of a portfolio long conservative investment companies and short aggressive investment companies. Standard errors are adjusted for serial correlations using the Newey West correction. ***1% significance; **5% significance; *10% significance.

January Rebalancing						
2010-2018, value-weighted	ALPHA	MKT	SMB	HML	RMW	CMA
$ESG_{low} - ESG_{high}$	0.0041**	-0.2102***	-0.0627	0.1193	0.0891	-0.3134*
	(0.002)	(0.068)	(0.125)	(0.136)	(0.139)	(0.184)
$ESG_{low} - Rf$	0.0027	0.7637***	0.2141**	-0.0009	0.3449***	0.0414
	(0.002)	(0.050)	(0.093)	(0.101)	(0.127)	(0.140)
$ESG_{high} - Rf$	-0.0014	0.9738***	0.1513**	-0.1202*	0.2557***	0.3548***
	(0.001)	(0.031)	(0.058)	(0.063)	(0.078)	(0.109)
2010-2018, equal-weighted	ALPHA	MKT	SMB	HML	RMW	CMA
$ESG_{low} - ESG_{high}$	0.0036**	-0.0027	0.1309*	0.0984	0.0067	-0.3851***
	(0.002)	(0.045)	(0.073)	(0.108)	(0.116)	(0.148)
$ESG_{low} - Rf$	0.0042**	1.2067***	0.7097***	0.0887	0.1180	-0.1011
	(0.002)	(0.041)	(0.069)	(0.079)	(0.099)	(0.116)
$ESG_{high} - Rf$	0.0006	1.0294***	0.5789***	-0.0096	0.1113	0.2841***
	(0.001)	(0.024)	(0.050)	(0.066)	(0.080)	(0.100)
December Rebalancing						
2010-2018, value-weighted	ALPHA	MKT	SMB	HML	RMW	CMA
$ESG_{low} - ESG_{high}$	0.0030*	-0.2172**	0.1124	-0.1401	0.0293	-0.1368
	(0.002)	(0.091)	(0.133)	(0.138)	(0.174)	(0.208)
$ESG_{low} - Rf$	0.0010	0.7975***	0.2434**	-0.200**	0.2961**	0.2766*
	(0.001)	(0.060)	(0.097)	(0.101)	(0.118)	(0.167)
$ESG_{high} - Rf$	-0.0020	1.0147***	0.1310	-0.0599	0.2667**	0.4135***
	(0.001)	(0.051)	(0.082)	(0.095)	(0.126)	(0.134)
2010-2018, equal-weighted	ALPHA	MKT	SMB	HML	RMW	CMA
$ESG_{low} - ESG_{high}$	0.0015	0.0490	-0.0032	0.0225	-0.1651	-0.1838
	(0.002)	(0.052)	(0.077)	(0.120)	(0.134)	(0.212)
$ESG_{low} - Rf$	0.0002	1.0131***	0.6502***	0.1144	0.0699	-0.0744
	(0.002)	(0.056)	(0.093)	(0.083)	(0.166)	(0.163)
$ESG_{high} - Rf$	-0.0013	0.9641***	0.6534***	0.0919	0.2350**	0.1094
	(0.001)	(0.035)	(0.055)	(0.096)	(0.100)	(0.130)

Table 23: Time-Series Regressions - Winsorization Levels

Results from time-series regressions of value-weighted portfolios long the bottom-rated 10% ESG companies. The dataset has been winsorized at the 0,1,5 and 10% level. $ESG_{low} - ESG_{high}$ is a portfolio long the 10% lowest-rated ESG companies and short the 10% top-rated ESG companies. $ESG_{low} - Rf$ is a portfolio long the 10% lowest-rated ESG companies less the risk-free rate. $ESG_{high} - Rf$ is a portfolio long the 10% highest-rated ESG companies less the risk-free rate. Portfolios changes each January or December based on ESG-ratings in year t. MKT is the excess market return. SMB is the return of a portfolio long small stocks and short large stocks. HML is the return of a portfolio long high book-to-market stocks and short low book-to-market stocks, RMW is the return of a portfolio long the most profitable companies and short the least profitable companies. CMA is the returns of a portfolio long conservative investment companies and short aggressive investment companies. Standard errors are adjusted for serial correlations using the Newey West correction. ***1% significance; **5% significance; *10% significance.

No winsorization						
2010-2018, value-weighted	ALPHA	MKT	SMB	HML	RMW	CMA
$ESG_{low} - ESG_{high}$	0.0068***	-0.2404**	0.0662	-0.1681	0.0944	-0.2080
	(0.002)	(0.094)	(0.182)	(0.193)	(0.197)	(0.275)
$ESG_{low} - Rf$	0.0045**	0.7427***	0.1404	-0.0913	0.3700**	0.2290
	(0.002)	(0.079)	(0.135)	(0.128)	(0.148)	(0.210)
$ESG_{high} - Rf$	-0.0023	0.9832***	0.0742	0.0768	0.2756*	0.4370***
	(0.001)	(0.044)	(0.083)	(0.095)	(0.143)	(0.140)
1% winsorization						
2010-2018, value-weighted	ALPHA	MKT	SMB	HML	RMW	CMA
$ESG_{low} - ESG_{high}$	0.0057***	-0.1763**	-0.0790	0.1963	0.0221	-0.3828*
	(0.002)	(0.080)	(0.145)	(0.154)	(0.164)	(0.200)
$ESG_{low} - Rf$	0.0038**	0.7784***	0.2187**	0.0943	0.2619**	-0.0025
	(0.002)	(0.063)	(0.103)	(0.101)	(0.124)	(0.157)
$ESG_{high} - Rf$	-0.0018	0.9547***	0.1397**	-0.1020*	0.2398**	0.3803***
	(0.001)	(0.038)	(0.071)	(0.070)	(0.110)	(0.102)
5% winsorization						
2010-2018, value-weighted	ALPHA	MKT	SMB	HML	RMW	CMA
$ESG_{low} - ESG_{high}$	0.0040**	-0.0543	0.0440	0.1055	-0.0716	-0.3219*
	(0.002)	(0.058)	(0.107)	(0.115)	(0.137)	(0.165)
$ESG_{low} - Rf$	0.0025	0.8932***	0.3312***	0.0649	0.1938*	0.0093
	(0.002)	(0.045)	(0.083)	(0.070)	(0.113)	(0.138)
$ESG_{high} - Rf$	-0.0015	0.9475***	0.2872***	-0.0406	0.2655***	0.3312***
	(0.001)	(0.033)	(0.051)	(0.065)	(0.080)	(0.082)
10% winsorization						
2010-2018, value-weighted	ALPHA	MKT	SMB	HML	RMW	CMA
$ESG_{low} - ESG_{high}$	0.0039**	-0.0333	0.0330	0.0003	-0.0664	-0.1980
	(0.002)	(0.047)	(0.086)	(0.091)	(0.119)	(0.141)
$ESG_{low} - Rf$	0.0029*	0.8801***	0.4116***	0.0410	0.1715*	0.0322
	(0.002)	(0.038)	(0.072)	(0.060)	(0.097)	(0.116)
$ESG_{high} - Rf$	-0.0011	0.9134***	0.3786***	0.0407	0.2379***	0.2302***
	(0.001)	(0.028)	(0.044)	(0.054)	(0.070)	(0.077)

Table 24: Time-Series Regressions - Ex Announcement Returns

Results from time-series regressions of value-weighted and equal-weighted portfolios long the bottom-rated 10% ESG companies. The value-weighted returns have been adjusted by removing the returns from the three days surrounding announcement dates. $ESG_{low} - ESG_{high}$ is a portfolio long the 10% lowest-rated ESG companies and short the 10% top-rated ESG companies. $ESG_{low} - Rf$ is a portfolio long the 10% lowest-rated ESG companies less the risk-free rate. $ESG_{high} - Rf$ is a portfolio long the 10% highest-rated ESG companies less the risk-free rate. Portfolios changes each January or December based on ESG-ratings in year t. MKT is the excess market return. SMB is the return of a portfolio long small stocks and short large stocks. HML is the return of a portfolio long high book-to-market stocks and short low book-to-market stocks, RMW is the return of a portfolio long the most profitable companies and short the least profitable companies. CMA is the returns of a portfolio long conservative investment companies and short aggressive investment companies. Standard errors are adjusted for serial correlations using the Newey West correction. ***1% significance; **5% significance; *10% significance.

Ex announcement						
2010-2018, value-weighted	ALPHA	MKT	SMB	HML	RMW	CMA
$ESG_{low} - ESG_{high}$	0.0050***	-0.1667**	0.1137	0.1156	0.0910	-0.2077
	(0.002)	(0.083)	(0.129)	(0.149)	(0.137)	(0.187)
$ESG_{low} - Rf$	0.0038**	0.7476***	0.1994**	0.0563	0.2363**	0.1064
	(0.002)	(0.061)	(0.086)	(0.090)	(0.106)	(0.146)
$ESG_{high} - Rf$	-0.0011	0.9143***	0.0858	-0.0593	0.1453	0.3141***
	(0.001)	(0.037)	(0.071)	(0.074)	(0.107)	(0.099)
2010-2018, equal-weighted	ALPHA	MKT	SMB	HML	RMW	CMA
$ESG_{low} - ESG_{high}$	0.0012	0.0909*	-0.0256	-0.0187	0.0348	-0.1824
	(0.002)	(0.049)	(0.086)	(0.081)	(0.126)	(0.120)
$ESG_{low} - Rf$	0.0008	1.0397***	0.5597***	0.0420	0.1614	0.0258
	(0.002)	(0.043)	(0.080)	(0.079)	(0.103)	(0.101)
$ESG_{high} - Rf$	-0.0003	0.9488***	0.5853***	0.0607*	0.1266*	0.2083***
	(0.001)	(0.027)	(0.054)	(0.056)	(0.069)	(0.080)

Table 25: Fama Macbeth - Ex Announcement Returns

This table reports results from Fama and Macbeth (1973) cross-sectional regressions for the period 2010-2018 and 2004-2018 on the monthly return of a stock net of the risk-free rate and the three days surrounding announcement returns on the lagged values of a set of well-known predictors of stock returns. $ESGDUM_{low}$ is a dummy variable which equals one if the company has an ESG-rating amongst the bottom 10% and $ESGDUM_{high}$ is a dummy variable which equals one if the company has an ESG-rating amonghst the top 10% in month t and zero otherwise. $LOGMB1$ is the logarithm of the market-book ratio. $RETADJ1$ is the monthly return of the company adjusted for delisting returns. $AVGMRET1$ is the average 12-month return. $LOGTURN1$ is the logarithm of average daily share turnover, during the past year. $LOGAGE$ is the logarithm of the age of the company. $BLEV1$ is the book-leverage of the company. $LOGSIZE1$ is the logarithm of the market capitalization. $BETA1$ is the 36-month rolling company beta. Standard errors are adjusted for serial correlation using standard errors as in Newey and West (1987). ***1% significance; **5% significance; *10% significance.

Excluding Announcement Return								
2010-2018	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$ESGDUM_{low}$	0.0035**	0.0034**	0.0033**	0.0031*	0.0028*	0.0028*	0.0021	0.0018
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)
BETA1	-0.0014	-0.0015	-0.0017	-0.0017	-0.0012	-0.0010	-0.0011	-0.0010
	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
LOGMB1		0.0009	0.0010	0.0000	0.0003	0.0005	0.0006	-0.0003
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001))
RETADJ1			-0.0138**	-0.0184***	-0.0179***	-0.0183***	-0.0181***	-0.0190***
			(0.007)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
AVGMRET1				0.0739**	0.0722**	0.0699**	0.0668**	0.0592**
				(0.030)	(0.029)	(0.029)	(0.028)	(0.027)
LOGTURN1					-0.0024***	-0.0023**	-0.0023**	-0.0031***
					(0.001)	(0.001)	(0.001)	(0.001)
LOGAGE						0.0020**	0.0020**	0.0008
						(0.001)	(0.001)	(0.001)
BLEV1							-0.0004	-0.0024
							(0.003)	(0.002)
LOGSIZE1								0.0013***
								(0.001)
2010-2018	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$ESGDUM_{high}$	0.0012	0.0011	0.0012	0.0013	0.0016	0.0006	0.0007	-0.0005
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
BETA1	-0.0014	-0.0015	-0.0017	-0.0017	-0.0012	-0.0011	-0.0011	-0.0010
	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
LOGMB1		0.0009	0.0010	0.0001	0.0003	0.0005	0.0006	-0.0003
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001))
RETADJ1			-0.0137**	-0.0183***	-0.0179***	-0.0183***	-0.0181***	-0.0190***
			(0.007)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
AVGMRET1				0.0742**	0.0725**	0.0701**	0.0671**	0.0593**
				(0.030)	(0.029)	(0.028)	(0.028)	(0.027)
LOGTURN1					-0.0024***	-0.0023**	-0.0023**	-0.0031***
					(0.001)	(0.001)	(0.001)	(0.001)
LOGAGE						0.0020**	0.0020**	0.0008
						(0.001)	(0.001)	(0.001)
BLEV1							-0.0004	-0.0025
							(0.003)	(0.002)
LOGSIZE1								0.0013***
								(0.001)

Table 26: Institutional Ownership Breakpoints

This table reports coefficients for the highest and lowest percentiles of ESG-rated stocks, denoted by $ESGDUM_{highx\%}$ and $ESGDUM_{lowx\%}$. Portfolios are formed in June in year t and institutional holding is measured at the end of year t. The percentile cutoffs are 2.5%, 5%, 10% and 20%. The percentile portfolios are regressed on six different dependent variables. IO_{10-18} is the overall institutional ownership from 2010-2018. IO_{04-18} is the overall institutional ownership from 2004-2018. BIO_{10-18} is the aggregate ownership of Thompson Reuters category owners (1),(2) and (5); banks, insurance companies and other from 2010-2018, while BIO_{04-18} is the holdings of the same group from 2004-2018. MI_{10-18} is the aggregate ownership of owner types (3) and (4); mutual funds and independent investment advisors from 2010-2018, while MI_{04-18} is the overall holdings of the same group from 2004-2018. Results for the other independent variables; *LOGSIZE*, *BETA*, *LOGMB*, *LOGAGE*, *LOGSTDRET*, *AVGMRET*, *LOGBB*, *LOGTURN*, *NASDAQ* and *SANDP*, are qualitatively similar to those in the industry-regressions and will not be reported for brevity. These are the results of pooled OLS regressions with Moulton's (1986) standard errors, clustered at the 48-industry groupings. ***1% significance; **5% significance; *10% significance.

Independent/Dependent variable	IO_{10-18}	IO_{04-18}	BIO_{10-18}	BIO_{04-18}	MI_{10-18}	MI_{04-18}
$ESGDUM_{high2.5\%}$	0.0141	-0.0052	0.0221	-0.0157	-0.0069	0.0119
	(0.024)	(0.023)	(0.017)	(0.016)	(0.009)	(0.010)
$ESGDUM_{high5\%}$	0.0002	-0.0102	0.0104	-0.0198	-0.0089	0.0119
	(0.022)	(0.020)	(0.016)	(0.014)	(0.010)	(0.010)
$ESGDUM_{high10\%}$	0.0034	-0.0159	0.0126	-0.0216	-0.0091	0.0074
	(0.020)	(0.019)	(0.014)	(0.020)	(0.014)	(0.007)
$ESGDUM_{high20\%}$	0.0064	-0.0122	0.0152	-0.0162	-0.0094**	0.0053
	(0.014)	(0.013)	(0.010)	(0.010)	(0.005)	(0.004)
$ESGDUM_{low2.5\%}$	0.0469	0.0271	0.0398*	0.0106	0.0036	0.0159
	(0.034)	(0.028)	(0.022)	(0.018)	(0.016)	(0.014)
$ESGDUM_{low5\%}$	0.0230	0.0100	0.0277	0.0033	-0.0060	0.0075
	(0.028)	(0.023)	(0.018)	(0.016)	(0.013)	(0.011)
$ESGDUM_{low10\%}$	0.0174	0.0079	0.0271**	0.0047	-0.0106	0.0035
	(0.016)	(0.015)	(0.013)	(0.013)	(0.008)	(0.007)
$ESGDUM_{low20\%}$	0.0119	-0.0021	0.0243**	-0.0015	-0.0126***	0.0003
	(0.012)	(0.011)	(0.010)	(0.010)	(0.004)	(0.004)

Table 27: Breadth of Ownership, 2010-2018

This table reports summary statistics for regressions with the logarithm of breadth of ownership as the dependent variable. *LOGBREADTH* is defined as the percentage of mutual fund managers who are long in a stock. $ESGDUM_{low}$ equals one if a stock is amongst the 10% lowest rated ESG-companies and zero otherwise. $ESGDUM_{high}$ equals one if a stock is amongst the 10% highest rated ESG-companies and zero otherwise. $ESGINDDUM_{low}$ equals one if the company is in one of the five lowest-rated industries Soda, Tobacco, Fun, Fabricated Products or Coal, and zero otherwise. $ESGINDDUM_{lex}$ equals one if the company resides in either the Soda, Fabricated Products or Coal-industries and zero otherwise. $GDUM_{low}$ is a dummy variable which is one if the company resides in any of the industries from $ESGDUM_{low}$ or its comparable industries Beer, Food, Toys, Steel or Oil, and zero otherwise. $GDUM_{lex}$ is a dummy which is one if the company resides in any of the industries of $GDUM$ except sin-industries and their comparable industries. *LOGSIZE* is the logarithm of the market capitalization of the company. *BETA* is the firms industry beta. *LOGMB* is the logarithm of the market-to-book ratio. *LOGYIELD* is the logarithm of the yearly dividend ratio divided by the price at the end of the year. *LOGAGE* is the logarithm of the number of years the company has been listed at COMPUSTAT at the end of the year. *LOGPRINV* is the logarithm of the inverse of the price at the end of the year. *LOGSTDRET* is the daily stock return standard deviation during the past year. *AVGMRET* is the average monthly return during the past year. *LOGBB* is the logarithm of the buyback ratio of the company during the past year. *LOGTURN* is the logarithm of average daily share turnover during the past year. *NASDAQ* equals one if the company is listed on NASDAQ and zero otherwise. *S&P500* equals one if the company is on the S&P500-index and zero otherwise. These are the results of pooled OLS regressions with Moulton's (1986) standard errors, clustered at the 48-industry groupings. The ownership data covers the period 2010-2018. ***1% significance; **5% significance; *10% significance.

Variable	(1)	(2)	(3)	(4)
$ESGDUM_{low}$	0.0409			
	(0.041)			
$ESGDUM_{high}$		0.0289		
		(0.053)		
$ESGINDDUM_{low}$			-0.1365**	
			(0.062)	
$ESGINDDUM_{lex}$				-0.1593
				(0.122)
$GDUM_{low}$			-0.0336	
			(0.038)	
$GDUM_{lex}$				-0.0510
				(0.037)
LOGSIZE	0.4987***	0.4988***	0.4963***	0.4968***
	(0.016)	(0.016)	(0.015)	(0.015)
BETA	0.2326***	0.2333***	0.2471***	0.2216***
	(0.051)	(0.051)	(0.048)	(0.051)
LOGMB	-0.0513***	-0.0513***	-0.0526***	-0.0534***
	(0.014)	(0.014)	(0.012)	(0.013)
LOGAGE	0.0342***	0.0340***	0.0480***	0.0493***
	(0.010)	(0.010)	(0.009)	(0.009)
LOGSTDRET	-0.2525***	-0.2525***	-0.2586***	-0.2553***
	(0.030)	(0.030)	(0.028)	(0.028)
AVGMRET	-1.0137***	-1.0121***	-0.8950***	-0.9117***
	(0.230)	(0.230)	(0.218)	(0.217)
LOGBB	0.0132***	0.0133***	0.0138***	0.0140***
	(0.004)	(0.004)	(0.004)	(0.004)
LOGTURN	0.1513***	0.1513***	0.1608***	0.1618***
	(0.017)	(0.017)	(0.017)	(0.017)
NASDAQ	-0.0059	-0.0052	-0.0056	-0.0067
	(0.025)	(0.026)	(0.023)	(0.023)
S&P500	-0.0784**	-0.0785**	-0.0731*	-0.0742*
	(0.039)	(0.039)	(0.039)	(0.039)

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