

# FIN 298A

## Independent Study:

Socially responsible investments: U.S. ESG ETFs  
overview, performance analysis, and self-  
constructed ESG funds

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# I. Introduction

ESG investment has been the buzzword nowadays, while the public, media, companies and regulators have paid more attention to business' sustainability efforts and social impact. In this research, we will be studying on existing ESG ETFs and comparing their performance with benchmarks, while constructing our own ESG portfolios from Sustainalytics scores.

## II. U.S. Equity ESG ETFs Overview

### ESG Investing Definition and Strategies

The Principles for Responsible Investment (PRI) determines that responsible investment is a strategy that takes three pillars into account in investment processes: environmental, social and governance (ESG). According to the CFA institute, there are six ways summarized to engage ESG issues in investment practices: exclusionary screening, best-in-class selection, active ownership, thematic investing, impact investing and ESG integration. Exclusionary screening rules out investment in controversial industries, such as alcohol and weapon manufacturing. On the contrary, best-in-class or positive selection makes investment in companies that outperform their competitors regarding ESG performance. Investors can also take an active role to engage in ESG issues by shareholder activities, such as exercising voting rights. This strategy is called active ownership. In thematic investing, investors specialize in particular industries that relate to addressing ESG concerns, for example, clean energy. Impact investors care about the outcome of their investment in society and environment besides financial return, and they are responsible for measuring the impacts created by the investees. The last strategy is ESG integration, which can be loosely defined as evaluating risks and opportunities derived from ESG issues. ESG integration suggests that investors include ESG as part of investment analysis where poor ESG performance may raise investees' operational and financial costs while robust ESG quality reduces compliance cost and improves worker efficiency. As more clients demand realizing social and environmental return along with financial return, investment managers commit more capitals in responsible investment. The PRI reports \$103.4 trillion asset managed by its 3,038 signatories as of March 2020 (including 775 signatories from the U.S.), up from around \$20 trillion ten years ago.

### U.S. ESG Regulations, Standards, and Ratings

MSCI concludes that 858 ESG regulations had been issued worldwide from 2010 to 2019, among 21 in the United States, where statutory bodies, industry bodies, governments, and financial regulators governs 2, 6, 7, and 6 regulations, respectively. Securities issuers are ruled by 17 of these regulations in the U.S., while investors are supervised by 4. Both the Commodity Futures Trading Commission (CFTC) and Securities and Exchange Commission (SEC) have recently launched more initiatives in ESG reporting. In September 2020, the Climate-Related Market Risk Subcommittee of Market Risk Advisory Committee under the CFTC was established and published 53 recommendations to guide the financial system through climate challenges, which is described as the first-of-its kind progress from the U.S. government. In

March 2021, the SEC founded the Climate and ESG Task Force under the Division of Enforcement, aiming to reinforce checking ESG misconduct and expand the supervision to asset managers and their ESG investment strategies.

In addition to the regulators' housekeeper role, standard bodies contribute significantly to providing ESG disclosure guideline. The most well-known standard makers include the Sustainability Accounting Standard Board (SASB), Task Force on Climate-Related Financial Disclosures (TCFD), and Global Reporting Initiative (GRI). There are continuous efforts on standardizing different rules and debates on adopting particular ones. In 2020, the SASB and GRI was reported to develop a plan for assisting users in navigating and understanding the conflicts and similarities between the two standards.

In the commercial space, ESG data rating agencies offer comprehensive scores and rankings of companies' ESG performance. They cover a wide range of companies globally, specializing in all or particular ESG elements. The notable vendors are MSCI, Refinitiv, Bloomberg, FTSE Russell, RobecoSAM, Sustainalytics, Arabesque, Vigeo EIRIS, and CDP. Although these rankings provide convenience to evaluate ESG performance, interpreting scores remains challenging. The data sources and methodologies are not fully disclosed and vary across vendors, which also hinders their comparability.

### III. Literature Review

An essential driver of the investor interest in socially responsible investment (SRI) is building a positive social image, as evidenced by the research by Riedl and Smeets (2017). They survey 3,382 socially responsible investors and find that the greatest motive contributor is intrinsic social preferences instead of financial performance. In their results, not only do investors leverage SRI to build a better reputation but also they are willing to make a trade-off between the returns and high management fees incurred by SRI.

Nonetheless, the debate of whether SRI outperforms conventional funds is unrested. At the firm level, Renneboog, Horst, and Zhang (2008) summarize two sources of SRI outperformance from strong corporate governance and commitment to high environmental and social standards: strengthen financial performance and reduce costs when crisis occur. Derwall et al. (2004, as cited in Renneboog, Horst, and Zhang 2008) finds that firms with better environmental ranks outperformed those with lower ranks. Similarly, Gompers et al. (2003, as cited in Renneboog, Horst, and Zhang 2008) discovers that firms with more robust corporate governance (measured by shareholder rights) generates higher return than the companies with weaker governance. At the portfolio level, many studies illustrate that returns of SRI portfolios are not statistically significantly different from traditional funds. Hamilton, Jo, and Statman (1993) split the U.S. conventional and socially responsible funds into two groups: founded before and after 1985. They compare Jensen's alpha between conventional funds and socially responsible funds in these two timeframes and find that difference in mean Jensen's alphas between the two types of funds in these two periods are not statistically significant. In an international scope, Bauer, Koedijk, and Otten (2005) also see a similar result in the United States, United Kingdom, and Germany. The difference in alphas between SRI and traditional mutual funds in all three countries are not statistically significant, measured by both CAPM and multi-factor asset pricing model. Some

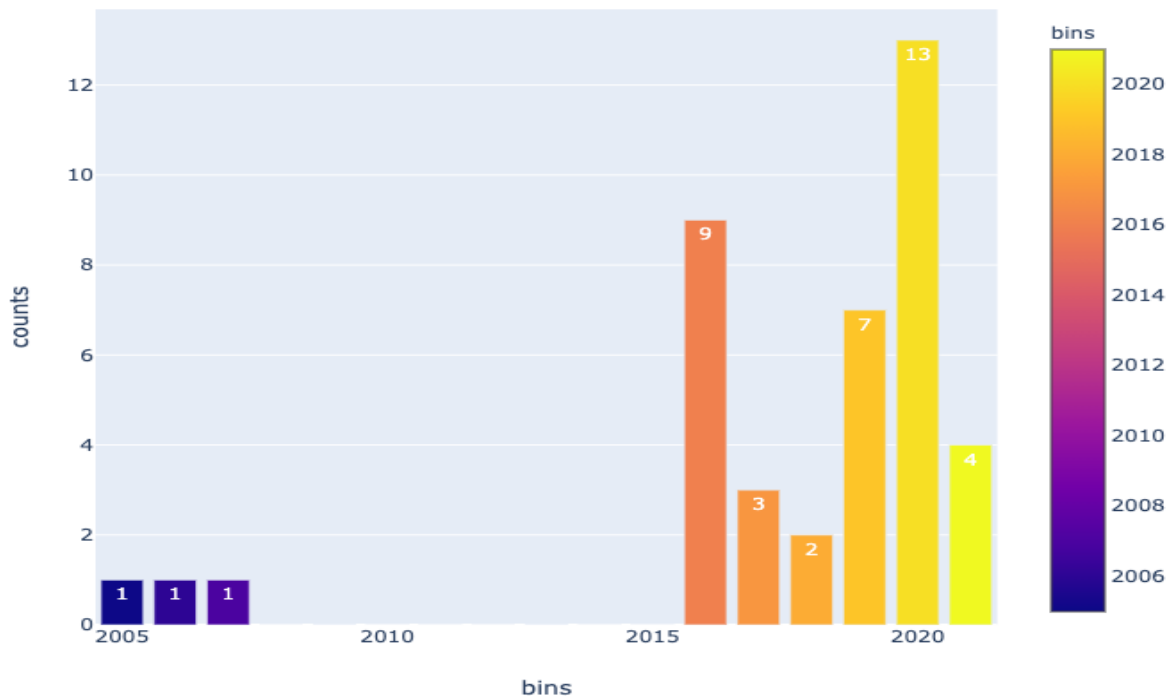
studies explain that several costs incurred in SRI funds drag returns. According to a meta-analysis from Revelli and Viviani (2014), one source of costs comes from fund managers' searching and determining socially (ir)responsible stocks. SRI's security selection process suggests that SRI mutual funds require active management, which creates another source of costs. Their aggregated analysis on 85 studies concludes that SRI doesn't underperform or outperform the conventional counterparts.

Another comparison between SRI and traditional funds is portfolio diversification. SRI funds limit the investable universe by excluding "sin" companies and undergoes security selection process, which might hinder risk/return trade-off, shown by a study by Geczy et al. (2006, as cited in Renneboog, Horst, and Zhang 2008). However, some studies show that less diversified SRI portfolios are not necessarily inefficient compared to well-diversified ones. Boutin-Dufresne and Savaria (2004, as quoted in Revelli and Viviani 2014) explain that if socially responsible companies have low idiosyncratic risks, under-diversification doesn't undermine funds' performance. Merton (1987, as quoted in Revelli and Viviani 2014) shows that well-diversified portfolios are not ideal if information is not equally available to all investors. Therefore, Revelli and Viviani (2014) believe that if only socially responsible investors can access to information about SRI, they can achieve better performance despite holding less diversified portfolios.

## IV. U.S. Equity ESG ETFs Performance and Analysis

### Characteristics

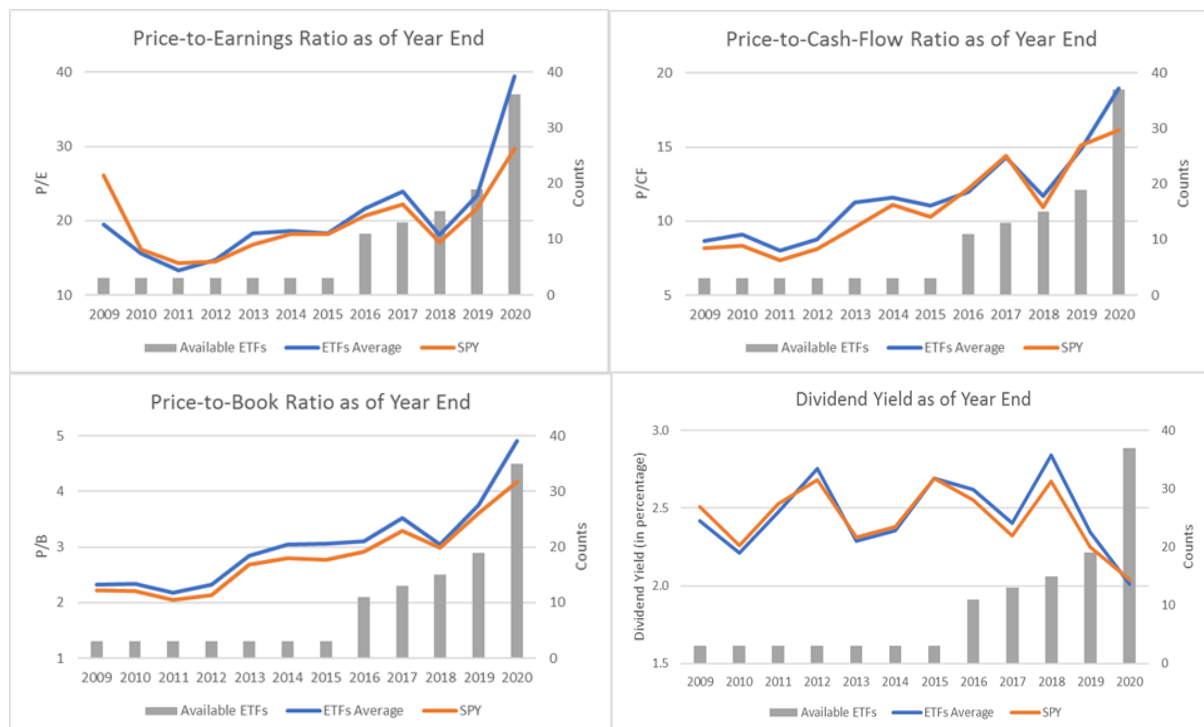
In this section, we analyze the existing equity ESG ETFs that have US exposure and are traded in the US. Using Bloomberg Terminal, we filter out 41 ETFs satisfying our criteria as of April 20th, 2021, which have a median US exposure at 96.93%. Technology, consumer discretionary, and health care are the most invested industries among these funds, with median exposure of 26.83%, 13.26%, and 12.91%, respectively. Financials also represents a large proportion with a median exposure of 11.81%. The number of holdings of the selected 40 ETFs spans from 34 to 1,499, with a median number of holdings of 265. The earliest US equity ETFs with US exposure were **iShares MSCI USA ESG Select ETF (SUSA)**, **iShares MSCI KLD 400 Social ETF(DSI)**, and **WisdomTree US ESG Fund(RESP)**, launched in 2005, 2006, 2007, respectively and these three funds remain the only available samples in our experiment until 2016 when another 9 funds were launched. 2017 and 2018 were relatively quiet before a boom in 2019 and 2020 when 7 and 13 new funds were introduced. Another 4 ETFs were launched in 2021 before our access to the database in late April 2021. Below shows the density distribution plot of all US ESG ETFs founding years.



Increasing media coverage and social focus has caused the boom of ESG ETFs in recent years. In particular, 2020 was a watershed year for ESG funds, with 13 starting funds. Some reports have attributed the spike to the COVID-19 pandemic, as ‘investors seek sustainable investments that can withstand an unpredictable market.’ According to Hortense Bioy, Director of Sustainability Research at Morningstar, ‘The disruption caused by the pandemic has highlighted the importance of building **sustainable and resilient business models** based on multi-stakeholder considerations.’ In the same report, Bioy said “The global health crisis has had an impact on all categories of the ESG model: beyond health and safety, the pandemic has resulted in **increased interest in employee benefits and ‘renewed focus on management compensation,’ as well as intensifying already increasing concern over the climate crisis.**” Looking into ETFs construction strategies, we find that 9 funds are actively managed (see Exhibit 1 for detailed fund names and tickers), and the rest 32 funds passively track **underlying indices** derived from **parent indices** (see more details in Excel ‘ESG US Expo & Traded.xlsx’ -> Sheet ‘Strategies’). **Parent indices**, such as *S&P 500*, which usually cover broad market exposure, undergo at least one selection screening in transition to **underlying indices** while the most prevalent screening methodologies are exclusionary screening and best-in-class selection. In exclusionary screening, the underlying indices share similar exclusionary criteria by eliminating the industries involved in weapons, tobacco, alcohol, and thermal coal. With best-in-class selection, they include companies with the highest ESG scores based on one or a few third-party rating agencies. The underlying indices share similar exclusionary criteria by eliminating the industries involving in weapons, tobacco, alcohol, and thermal coal. Many ESG indices also blend the two methodologies, weighting the constituents’ weights by ESG ranking or replicating the industry’s exposure underlying the parent indices.

For the actively-managed ETF fund universe, the screening methods resemble those in passively managed funds in exclusionary screening, removing controversial industries. On top of screening, some active funds apply quantitative methods to exploit price inefficiencies among the selected companies, for example, *ECOZ*, *FEVR*, *GLRY*, *STNC*, and *TEGS*. The others conduct fundamental research to identify deep discount stocks, for instance, *ESGA*, *LOPP*, *MID*, and *RESP*.

## Plots of fundamental data



## Return and Risk Analysis

### All Funds Lifetime Metrics Exhibit Analysis

Exhibit 2 shows the following **lifetime** metrics of all funds as well as their relevant benchmarks in the table: Annualized return, Annualized volatility in the form of sample standard deviation, Sharpe ratio, Maximum drawdown, Beta, Alpha, Information ratio, Treynor ratio, Sortino ratio. In the exhibit, the first row shows the fund's metrics while the next row shows those of the benchmark. All metrics were computed and annualized from daily returns of the funds and the benchmarks. If a fund's benchmark is unknown or it does not anchor to a parent index, we defaulted the benchmark to be S&P 500 (SPY). The proxy for free interest rate we chose was the annualized Second Market Rate for 3-month U.S. Treasury Bill in order to compute Sharpe ratio, Jensen Alpha, Information ratio, Treynor ratio and Sortino ratio, assuming a short-term holding period in these funds. The choice of risk free rate, however, would not affect our conclusion, if

we were to compare the performance of one ETF fund with the benchmark, since both involve using the same risk free rate to compute performance metrics (*controlled variable*).

Though Fund and Hiseh (1997) and Liang (2000) *reference* emphasize that the minimum sample size for obtaining meaningful performance measures is 36 months, while more than half of the ESG funds in analysis started after 2019 and do not meet the criteria, we would address the insufficient data issue later in this report. For the moment, we will try to gain meaningful insights from all fund performance metrics.

If we focus on the beta of the table, we could see that 21 (51.2%) ESG funds have beta within 10% of 1, i.e. within the range of 0.9 and 1.1; 34 (82.9%) ESG funds have beta within 20% of 1; 37(90.2%) funds have beta within 30%. With beta close to 1, we could conclude that these ESG funds have high exposure to systematic risk. Indeed, since ETF funds usually hold a basket of stocks while in particular, passive ETFs resemble underlying indices in terms of composites, they are expected to have high exposure to market risk.

However, if we limit the range of ETFs to active funds only (Exhibit 4), we could observe that all the 9 funds except *ESGA* have beta out of the 15% range of 1. Though only *RESP* among the group was founded before 2020, and the results were not representative at large, we may find some reasons to explain the relative irregular beta of active funds if we look at their screening methods. In fact, *RESP*, (beta: 0.799) one of the three ESG ETFs with longest period, shows less exposure to the market risk than *DSI* (beta: 0.907) and *SUSA* (beta: 0.898), the other two funds created before 2010 but passive. Note that before March 16, 2020, *RESP* was passively managed, tracking the WisdomTree U.S. Total Market Index. Since then, the fund was actively managed by implementing fundamental and technical factors to exploit return.

In addition, Exhibit 5 lists differences in return (*Return\_diff*), volatility (*Volatility\_diff*), Sharpe ratio (*Sharpe Ratio\_diff*) and maximum drawdown (*Mmd\_diff*) between each fund and its benchmark. We are aware that a large number of these funds do not have sufficient data to validate the robustness of the results, and we will address this issue in the next section. For the moment, we can observe that 21 (51.2%) ESG funds have annualized returns greater than their benchmarks in their lifetime, while 16 (39.02%) ESG funds have returns greater than their benchmarks by 1% and 3 (7.3%) funds have returns greater than their benchmarks by 5%. The 3 funds are with tickers *AVDG*, *GLRY* and *IQSU*. The former two started in 2020 while *IQSU* started in December 2019, and their relative short lifetime cautions us not to make an assessment on their outstanding return at this time. We may need to wait another few years before reaching a conclusion on their performance.

In the meanwhile, we will visit the Sharpe ratio difference between each fund and its benchmark in order to assess ESG funds' returns per unit of total risk. 21(51.2%) ESG funds have a larger Sharpe ratio than their benchmarks while 9 (22.0%) have a larger Sharpe ratio than their benchmarks by 0.1 while 3 (7.3%) have a larger Sharpe ratio than their benchmark by 0.2.

Besides, Exhibit 5 lists the maximum drawdown difference between each fund and its benchmark. Since maximum drawdown is negative, and a larger maximum drawdown is better, a

large difference in maximum drawdown then entails better risk performance. 22 (53.7%) ESG funds have better maximum drawdown than their benchmarks.

Moreover, in addition to all the ratios reported in Exhibit 2 and 5, Exhibit 6 reports the correlation among ESG funds daily returns starting on Jan 1<sup>st</sup>, 2020 and ending on Jan 1<sup>st</sup>, 2021. In order to compute correlation matrix, all funds should have the same length of data. In addition, we need to balance the data length and the number of funds included. For example, if we compute correlation of funds starting April 1<sup>st</sup>, 2021, though we may be able to include more funds than Exhibit 6 reports, the correlation matrix is based only on around 20 days returns and thus not significant for any inference. Exhibit 6 includes 24 funds that started before 2020. While excluding a few funds that started recently, it nevertheless posts results computed from 16 months daily returns and shows convincing patterns.

From the Exhibit, we can see that all the funds have high correlation among themselves, while the lowest correlation is 0.77, between *ISMD* and *NULG*, *ISMD* and *NUMG*. In fact, *ISMD* posts relatively low correlation with any other funds. One interpretation is that '*ISMD*' has small exposure to technology at only 14%, compared to the median exposure of 26.83% among all the 40 ETFs. On the other hand, several funds show higher than 0.95 correlation among each other as displayed at the bottom right of the exhibit. The three funds *SUSA*, *DSI* and *RESP* show close to 1 correlation during this period. A correlation matrix (Exhibit 7) among the three, from Jan 1<sup>st</sup>, 2008 to Jan 1<sup>st</sup>, 2020, tells a different story though. The two passive funds *SUSA* and *DSI* have high correlation. (0.93) between themselves while the active fund *RESP* displays relative low correlation with both *SUSA* (0.85) and *DSI* (0.84). In fact, *RESP* is the only active fund with sufficient data (more than 36 months), and their difference may reveal insights between passive and active funds as well.

Besides, in order to investigate into each fund's risk, we posts each fund's 1% and 5% annualized historical VaR converted from daily returns in Exhibit 9 as well as their benchmarks. We have retained the minus sign for the value and -0.56 for 1% annualized VaR, for example, means extrapolating the historical data into the future, we are 99% confident that the annual return would not experience a worse than 56% drawdown. In general, 23 (56.1%) funds have better 1% VaR performance than their underlying benchmarks while 18 (43.9%) have better 5% VaR performance than their benchmarks.

Meanwhile, in order to study each fund's return, we run Fama French Five Factor Regression on their monthly return and display the results in Exhibit 8. A total of 37 funds' regression results are shown, since some have fewer than 2 monthly return data and do not support OLS regression at all. According to definitions given by Fama French website, the five factors are SMB (Small Minus Big), HML (High Minus Low), RMW (Robust Minus Weak), CMA (Conservative Minus Aggressive) and  $R_m - R_f$ , the excess return on the market, while SMB captures the average return on the small stock portfolios minus the average return on the big stock portfolios; HML captures the average return on the value portfolios minus the average return on the growth portfolios; RMW is the average return on the robust operating profitability portfolios minus the average return on the weak operating profitability portfolios; CMA is the average return on the conservative investment portfolios minus the average return on the aggressive investment portfolios.



Each row in Exhibit 8 reports the coefficients of the particular fund's monthly return regressed on the 5 factors and the intercept (alpha), as well as their t-values as a proxy to determine the coefficients' statistical significance. However, the 6 funds to the bottom of the exhibit do not report t-values for coefficients, since they started after December 2020 and their regression run short of data. All other funds have the coefficient for market excess return factor close to 1 except *TEGS* (0.584) and *MID* (0.65), as confirmed by beta computed using daily returns early on. Moreover, all market excess return coefficient t-values reported are greater than 3, indicating they are statistically significant. In fact, a large number of are greater than 10. In addition, no t-values for intercepts except that of *USXF* are greater than 2 to report statistically significant alpha. *USXF* is young, launched in June 2020. It has an above average exposure to technology, compared to other tested ETFs. Particularly, it has a combined 12% exposure to Google and Tesla, which have performed extremely well since the fund's inception. Concentrated exposure in well-performing assets and relatively short existence might be the contributors to the significance in alpha. Moreover, statistical significance on other factors may tell the nature of the funds. For example, *NUSC* reports 0.63 for the coefficient of SMB factor with a t-value of 9.469. The regression suggests that the fund's return can be partially attributed to its holdings of small cap companies, while *NUSC* is Nuveen ESG Small-Cap ETF and holds more than 100 small cap stocks.

### Return/Risk Analysis Of Funds With At Least 48 Months Data

In the last section (funds started earlier than March, 2017), we have examined all funds performance at large, while in this section, we will be focusing on funds which have at least 48 months return data in order to meet Fund and Hiseh (1997) and Liang (2000)'s criteria of minimum sample size for meaningful performance measures. We chose 48 months instead of 36 proposed by the three so that we could run rolling Sharpe ratio of 36 months window for at least 12 months and obtain meaningful insights from the 12 months rolling data.

As shown in Exhibit 10, in total we find 13 funds matching the criteria. The 13 funds all have reported double digits annualized return for their lifetime, while except *ESGS*, *ISMD* and *NUSC*, the rest have reported positive Jensen alpha. Meanwhile, as we discussed in the last section, all ESG funds we listed here have lifetime beta close to 1.

In addition, we find that 10 funds (76.9%) have better return performance than their benchmarks, while on average, they record annualized return 1.69% higher than their benchmarks. Moreover, the 10 funds on average reports annualized volatility 0.4% lower than their benchmarks and as a result they have Sharpe ratio 9% better than benchmarks. However, in general, all 13 funds on average have only 0.26% higher annualized return and 0.9% higher Sharpe ratio than their benchmarks. The discrepancies between the good performance fund cohort and the group are caused by the three poor performance ESG funds. *ESGS* records return 6.5% lower than *SPY* while posting 2.8% higher volatility. As a result, its Sharpe ratio is 40% lower than *SPY*. Similarly, *ISMD* and *NUSC* post 9.2% and 13.3% lower Sharpe ratio than their benchmarks. *ESGS* has much higher exposure to utilities, which has a relatively weak return during the lifetime of the fund. It has 11.4% exposure in utilities whereas *SPY* has around 2.5%. Also, *ESGS* has the least exposure to technology among the 40 funds, with only 9.59%. The median

level is 26.83% and *SPY* has about 25%. In terms of volatility, the fund has 19.05% of value in financials, which generates a mediocre return but with relatively large volatility. Other funds and *SPY* have financials exposure at about 12%. Similarly, compared to *SPY*, *NUSC* underweights technology and overweights financials. Exhibit 11 compares the difference in risk measures between each ESG fund starting before April 2017 and its benchmark. 7 (53.8%) funds have better 1% annualized VaR than their benchmarks while only 5 (38.5%) funds have better 5% annualized VaR. However, 9 (69.2%) funds have better maximum drawdown performance than their benchmarks.

Moreover, if we examine the 13 funds' Fama French regression results in details in Exhibit 12, we find no fund records significant t-values for alpha, despite that a few funds posts remarkable lifetime returns. The results show that the funds returns have been well captured by the five factors.

In addition to Fama French regression analysis, we plot in Exhibit 13 the 36-months annualized rolling Sharpe ratio for the 13 funds based on their monthly returns. In each subplot, the blue line is the rolling Sharpe ratio of the fund while the red line the rolling Sharpe ratio of its underlying benchmark. The plot tries to detect historical Sharpe ratio patterns of the fund and its benchmark. The patterns have confirmed lifetime Sharpe ratios in Exhibit 10, showing that if a fund is higher (lower) in Sharpe ratio than its benchmark, then it has consistently had a higher (lower) ratio. The only exception is *NUMG*, while it trailed behind *VOT*, its benchmark before the pandemic sell-off, it managed to bounce back better than the benchmark. It might be due to *NUMG* greater proportion of holdings in technology, which is 40%, compared to 30% in *VOT*.

In order to better check the robustness of Sharpe ratio difference between each fund and its benchmark, we perform hypothesis testing with it using studentised bootstrap proposed by Ledoit and Wolf (2008) and report the results in Exhibit 14. While traditional student t test assumes normality and independence for the dataset and is not robust to small sample bias, the test on the two-sided distribution obtained from bootstrapping resamples would take heavy tail effect into consideration and then work better on Sharpe ratio. The method proposed by them involves resampling blocks of data with replacement in order to capture autocorrelation and it embeds a block-size calibration algorithm. However, the calibration process is computationally heavy and we then set the block size to 5 arbitrarily. Following their suggestion, we set the number of resampling to be 5000.

We will then set an error probability (popular values: 1%, 5%, 10%) in advance and compare the P-value generated from the bootstrapping method with the error probability. The difference would be significant only if P-value is smaller than the error probability.

Hence, in our case, only *KRMA* (0.038) and *NULG* (0.076) have significantly higher Sharpe ratio than the benchmarks at 10% error probability level, similar to the results posted by rolling Sharpe ratio graphs in Exhibit 13. They are the only two to consistently generate better 36 month rolling Sharpe ratios than their benchmarks.

We also plot the cumulative return of the 13 funds and *SPY* starting in April 2017 in Exhibit 15 to better capture the funds' performance during the same period. This time, only *NULG* and

*NUMG*, two ETFs with significant holdings on growth stocks beat S&P 500 during the same period. Though *KRMA* shows significantly better results than its benchmark in previous studies, it does not really beat *S&P 500*.

## V. Self-Constructed Portfolios Performance and Analysis

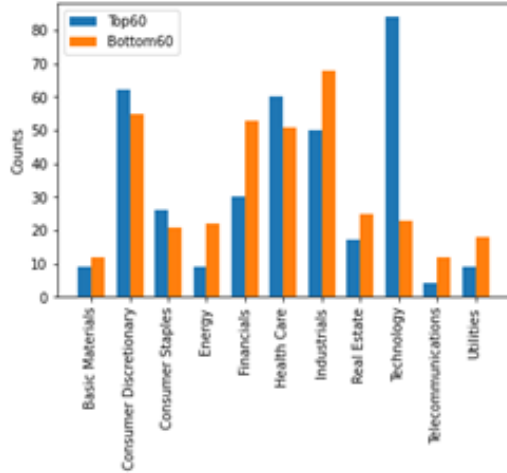
### Construction method

To further analyze the relationship between ESG rankings of holding companies and portfolio performance, we construct two portfolios based on company ESG rankings: the top portfolio includes stocks with highest ESG rankings, and the bottom portfolio contains stocks with lowest ESG rankings. For the convenience of modeling, we rebalance the portfolios at the beginning of a year rather than traditional quarterly-rebalance. We start with selecting the Russell 3000 components graded by Sustainalytics, a leading ESG rating available on Bloomberg Terminal. Since we only rebalance our portfolios once a year, we excerpt the year-end rankings for each year, beginning from the earliest year available, 2014, to 2019. To implement a forward-looking perspective, we assume the prior year-end ranking to sustain in the following year. For example, XYZ company's ESG grade on December 31, 2019 is assumed to last for the entire 2020. The number of companies graded by Sustainalytics ranges from 585 to 666 between 2014 and 2019, and we further remove stocks without a full year of price data, which may be due to delisting, M&A activities, or liquidation. According to the Sustainalytics rankings, we then group the highest 30 and 60 ESG ranked companies into two portfolios: top30 and top60; similarly, we place the lowest 30 and 60 ESG ranked companies into two portfolios: bottom30 and bottom60. These results give us two contrasted sets: top30 against bottom30 and top60 against bottom60, where each set covers around 10% and 20% of the total available ESG-ranked companies, respectively. Lastly, we allocate asset weights in these four portfolios in two ways: market capitalization weighted and equal weighted. In market capitalization weighted method, we distribute portfolio weights in the current year based on the market value at the end of the prior year.

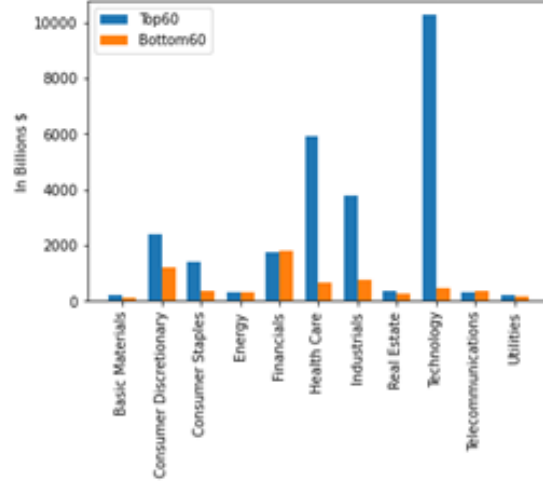
Summarizing the portfolio construction process, firstly, we create two pools: top and bottom, based on ESG rankings, where each pool is then allocated with 30 and 60 stocks. In the following step, these four portfolios are grouped in two sets of contrasted portfolios: top30 against bottom30 and top60 against bottom60. Lastly, we have these four portfolios weighted by market capitalization and equal proportions, giving us a total 8 portfolios. Since we rebalance the portfolios annually, the above three steps will be repeated once a year. With these variations, we can evaluate portfolio performance over time along with the change of portfolio companies' ESG rankings in different numbers of holdings and portfolio weighted methods. Last but not least, we also compare the above 8 ESG-ranked portfolios with a benchmark, S&P 500. We extract 30 and 60 constituents with the largest and smallest market capitalization from the S&P 500, creating 4 benchmark portfolios: S&P 500 top30, S&P 500 top60, S&P 500 bottom30, and S&P 500 bottom60. Using the same methods from weighting the ESG portfolios, we allocate the benchmark portfolios' component weights by market capitalization and equal proportion.

## A. Characteristics (sector exposure, total market weights)

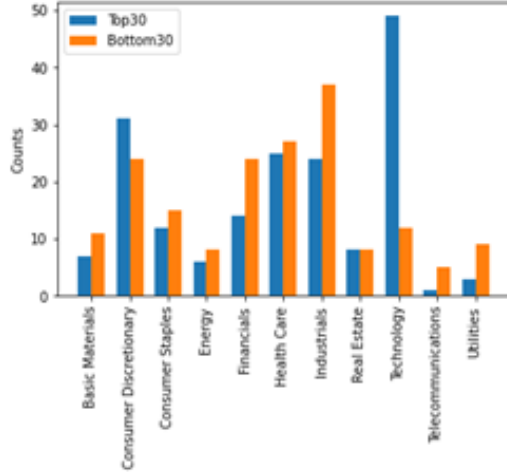
ESG Rank Top/Bottom 60: Total Number of Companies, 2014-2019



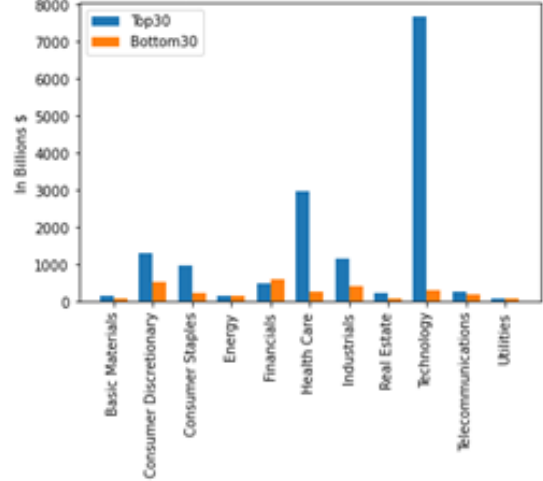
ESG Rank Top/Bottom 60: Total Market Cap, 2014-2019



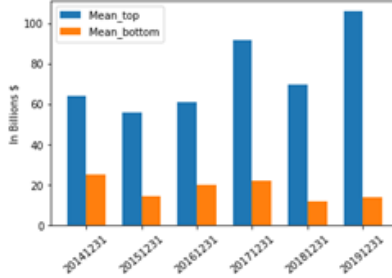
ESG Rank Top/Bottom 30: Total Number of Companies, 2014-2019



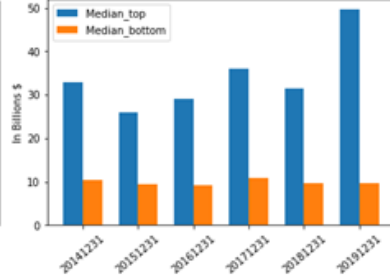
ESG Rank Top/Bottom 30: Total Market Cap, 2014-2019



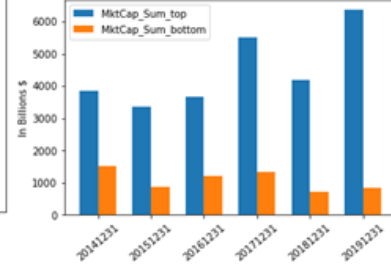
ESG Top/Bottom60 Mean Mktcap



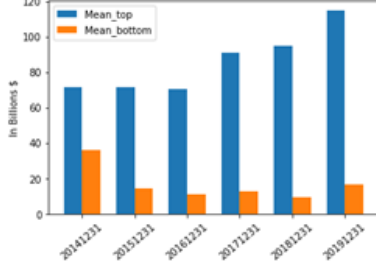
ESG Top/Bottom60 Median Mktcap



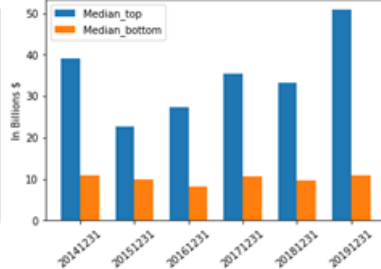
ESG Top/Bottom60 Total Mktcap



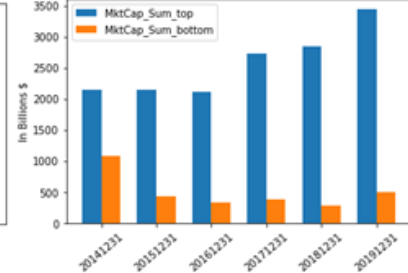
ESG Top/Bottom30 Mean Mktcap



ESG Top/Bottom30 Median Mktcap



ESG Top/Bottom30 Total Mktcap



## Highest and lowest 60 ESG-ranked companies

Among the highest 60 ESG-ranked companies, technology firms occupy the most seats in the 6-year span, with a frequency of 84 out of 360. Consumer discretionary and health care follow technology to have a total of 62 and 60 appearances out of 360, respectively. Among the lowest 60 ESG-ranked companies, industrials, consumer discretionary, and financials take up the first three places in terms of aggregated company counts, with 68, 55, and 53, respectively. Health care also have 51 appearances in the lowest 60 ESG-ranked groups. In terms of market cap, in the highest 60 ESG-ranked group, technology has a total of \$10.3 trillion in the 6-year period, followed by health care's \$5.9 trillion and industrials' \$3.8 trillion. In the lowest 60 ESG-ranked groups, financials, consumer discretionary, and industrials make up the top 3 spaces, with aggregated \$1.8 trillion, \$1.2 trillion, and \$0.75 trillion, respectively.

## Highest and lowest 30 ESG-ranked companies

In the highest and lowest 30 ESG-ranked groups, the general trends resemble those in the highest and lowest 60 ESG-ranked groups. Technology, consumer discretionary, and health care again account for the first 3 places in counts among the highest 30 ESG-ranked companies, with 49, 31, and 25 appearance out of 180 in the 6-year period. In the lowest 30 ESG-ranked group, industrials, health care, consumer discretionary, and financials appear most frequently, with 37, 27, 24, and 24 times, respectively. Technology, health care, and consumer discretionary have a total \$7.7 trillion, \$3.0 trillion, and \$1.3 trillion aggregated market value in the highest 30 ESG-ranked group. For the lowest 30 group, financials, consumer discretionary, and industrials contribute most aggregated market value to the portfolio, representing \$0.61 trillion, \$0.52 trillion, and \$0.42 trillion, respectively.

## Insights

Technology contributes significantly to both top30 and top60 portfolios in terms of company counts and market value. However, we can't conclude that technology firms are more ethical based on their larger representation because our sample is based on the 600 companies currently ranked by Sustainalytics out of all constituents in the Russell 3000. Nonetheless, the significant market value of the selected technology firms suggests the inclusion of large-cap and mega-cap giants, which have a substantial influence on portfolio return. Also, most industries have less aggregated market value in the top30 than in the top60 due to fewer companies selected; interestingly, technology don't decrease proportionally. The aggregated market value of technology only falls 25%, from \$10.3 trillion in top60 to \$7.7 trillion in top30. This result again indicates technology's dominance in our experiment. Compared to the top portfolios, bottom30 and bottom60 portfolios have less industry concentration, spreading across industrials, consumer discretionary, financials, and health care. Similarly, we can't say that these industries are not ethical because we only include companies with an ESG rank in our experiment. Furthermore, there is a significant market value gap between top and bottom portfolios measured by all three metrics: mean, median, and sum. We can also see an upward market value in the top portfolios but a declining trend in the bottom portfolios. One interpretation to this phenomenon is that larger companies may have an edge in financial and human capital to improve ESG rankings

## Analysis

We then compute the performance metrics of the self-constructed portfolios as well as *S&P 500* and report them in Exhibit 16. The name column refers to the specific portfolio. For example, *ESG\_T60* refers to the self-constructed portfolio composed of top 60 companies ranked by Sustainalytics; *ESG\_B30* refers to the self-constructed portfolio composed of bottom 30 companies ranked by Sustainalytics; *SP\_B30* refers to bottom 30 companies in *S&P 500* universe and etc. The column type refers to the construction method of the portfolio, i.e. if the portfolio is market-cap weighted or equal weighted. Meanwhile, we have the *RESP ESG ETF* printed in the same Exhibit for comparison.

All our portfolios record beta around 1 regardless of whether the portfolio is constructed from top Sustainalytics-ranked stocks or bottom ones. In addition, in general market-cap weighted portfolios seem to have better performance in returns and Sharpe ratio than their equal weighted counterparts. Moreover, a portfolio constructed from top Sustainalytics-ranked stocks (*ESG\_T60*) seems to have better performance than a portfolio composed of bottom stocks (*ESG\_B60*). Having slightly lower volatility, *ESG\_T60* almost doubles the return (19.2% to 10.2%) as well as Sharpe ratio (0.984 to 0.443) compared to *ESG\_B60*. However, on the other hand, *ESG\_T60* does not record impressively better returns (19.2% to 16.8%) than *SP\_T60*. At the same time, *SP\_T60* posts significantly (not statistically verified yet) higher returns than *SP\_B60*, indicating the returns generated by *ESG\_T60* may come from large technology growth stocks, which both itself and *SP\_T60* include. Besides, *ESG\_T30* records similar performance with that of *ESG\_T60*.

In order to better understand the portfolios' performance, we then run Fama French five factor regression on each portfolio and show the results in Exhibit 17. Confirming our observation of beta in Exhibit 16, all portfolios have the coefficient for factor Mkt-Rf around 1 while having very large t-values for that coefficient. In addition, despite the remarkable returns some ESG portfolios composed of top ESG-ranked stocks have posted in Exhibit 16, the Fama French regression shows that they don't have significant alpha. For the SMB factor, the bottom portfolios present some interesting values. *ESG\_B60* equal-weighted have a higher SMB coefficient than its market-cap-weighted counterpart, while the former's t-value (4.107) is much more significant than the latter's (0.543). *ESG\_B30* posts similar results as well. The market-cap-weighted approach may take large corporations such as Facebook which unfortunately fall into the lowest ESG-ranked cohort into consideration. As a result, *ESG\_B60* market-cap-weighted performance is more determined by these large corporations than the equal-weighted one. In addition, neither the top nor bottom stocks constructed ESG portfolios seem to include a large part of value stocks as none has a significant HML t-value. However, the ESG portfolio constructed from top stocks seem to love profitable stocks, since both *ESG\_T60* and *ESG\_T30* post significant RMW t-values, whereas *ESG\_B60* and *ESG\_B30* seem to rule out the most profitable companies. However, it is too hasty to conclude that ESG scores may help determine the profitability of a firm and higher ESG score indicates higher profitability. As we mentioned earlier, *ESG\_T60* or *ESG\_T30* include a great number of large market cap technology companies and these companies usually post high profits. In fact, if we look at *SP\_T60* and *SP\_T30*, they have significant t-values of RMW coefficients as well, indicating they may include the same group of profitable technology companies. In fact, all portfolios derived from *S&P500* have

significant t-values of RMW coefficients, since *S&P500* requires its composite to have at least 4 quarters of positive earnings.

In Exhibit 18, we plot the 36-month rolling Sharpe ratio of the self-constructed ETFs. The patterns have been consistent with the performance metrics in Exhibit 16. For example, *ESG\_T60*'s Sharpe ratio has been persistently higher than that of *ESG\_B60* as well as *S&P 500*. However, their gap was larger during 2018 and 2020. After the pandemic sell-off in March 2020, all funds' Sharpe ratios seem to converge except *ESG\_T60* market-cap weighted. However, when the market began to bounce back, the converged ones seem to diverge again. The second plot focusing on the 30 stocks constructed portfolios show similar trends. From both graphs, we could see that the gap between the portfolio constructed using top Sustainalytics stocks and bottom ones is the biggest.

In Exhibit 19, the bootstrap test on the Sharpe ratio differences between six fund pairs that have a large performance gap in above analysis. At 10% level, *ESG\_T60*'s Sharpe ratio is significantly higher than *ESG\_B60* and *S&P 500*, while *ESG\_T30* does not post significantly higher Sharpe ratio than *ESG\_B30*. One potential explanation is that a few large technology firms such as Facebook have more saying in *ESG\_B30*'s return than in *ESG\_B60*. As a result of their robust performance in the period we research, *ESG\_B30*'s performance does not trail much to that of *ESG\_T30*.

## VI. Conclusion

ESG has indeed become a buzzword these days and there are quite a number of ESG ETFs starting in year 2020 and 2021. In fact, half of all ESG ETFs which have exposure to U.S. equities and are traded in the U.S. were launched in the recent two years. Their short lifetimes and insufficient return data make it hard to gain insights into their performance. We may need to wait a few years before drawing conclusions on their performance at large. However, these ETFs in general have strong correlation among themselves and the market. Their holdings on a large of companies may cause that close relationship with the market and among themselves. The few exceptions have unique holdings. For example, *ISMD* posts relatively low correlation with other ETFs, since it has only 14% technology stocks exposure while the median technology exposure of the 40 ETFs is 27%. Overall, the 40 funds do not record significantly better performance than their benchmarks; only 51% of them have a larger Sharpe ratio than their benchmarks. Moreover, the ESG ETFs win over their benchmarks slightly in risk metrics such as maximum drawdown and historical VaR. Roughly 55% ETFs have better risk performance than their benchmarks. However, half of all funds have a very short lifetime (fewer than 16 months) and may greatly reduce the significance of our observations.

In order to overcome the problem caused by insufficient data of some ESG ETFs and verify our results, we analyze ESG ETFs with at least 48 months return data (fund started in March, 2017 latest). This time, we find that 10 out of 13 funds have better performance than their benchmarks. Among them, *KRMA* and *NULG* have significantly higher Sharpe ratio than their benchmarks, verified by the bootstrapping test. In fact, they are the only two which led consistently and significantly in 36 months rolling Sharpe ratio in front of their benchmarks, though once we plot all 13 funds cumulative returns with *S&P 500*, *KRMA* does not really beat *S&P 500*. It may

outpace the benchmark it anchors, but after all it lags behind one of the most important market index in U.S. In addition, five factor Fama French regression indicates that *NULG*'s success may be partially owing to its large exposure to growth stocks as it records significant negative coefficient on *HML*. Growth stocks, especially large cap growth stocks such as those big name technology stocks, achieve remarkable growth over the past decade and fuel ETFs which have large exposures to them.

In addition, the three ESG ETFs with the longest lifetime tracing back before the 2008 GFD show some interesting patterns. All three have stayed close to the market, however, *RESP*, which is converted to an active fund from passive since June 2020, records relatively lower correlation with the other two than the two between themselves. *RESP*'s holdings on value stocks may explain the discrepancies. Unfortunately, even though *RESP* exists for a longer time than the other 8 active funds started after 2020, it still has a short history of relevant price data under an active managed style. A more thorough investigation between active ESG funds and passive funds may be carried a few years later.

On the other hand, when measuring the performance of self-constructed portfolios, we found that the portfolios constructed using top ranked Sustainalytics stocks have significantly higher Sharpe ratio than bottom ones. However, portfolios constructed using top companies from *S&P500* also record very impressive returns during the same period. This may relate to the returns we see *NULG* posts in analysis before, as the two mentioned self-constructed portfolios and *NULG* all have large exposures to large-cap technology growth stocks.

In addition, the portfolio constructed using top ranked Sustainalytics stocks has significant RMW factor coefficient in Fama French regression analysis, while the portfolio constructed from bottom ones does not. Though *ESG\_T60*'s exposure to large-cap technology growth stocks with high earnings may contribute to that, *SP\_B60*, which does not contain the same cohort, has significant RMW factor as well. The reason for all portfolios constructed from *S&P 500* universe have the significant RMW factor is that *S&P 500* requires all composite stocks to post at least 4 positive quarterly earnings. So the large-cap technology growth stocks may not be able to explain the RMW t-value difference between *ESG\_T60* and *ESG\_B60*. The latter has a significantly less exposure to profitable companies. Maybe ESG standards help differentiate more profitable companies from less, however, to draw the conclusion, more research needs to be done into the relationship between profitability and ESG standards.

Overall, though the portfolios constructed from high Sustainalytics scores stocks have consistently higher Sharpe ratio than their bottom peers, the Fama French regression indicates that none has a significant alpha. Maybe after a few year, when the active funds posts sufficient data, we may be able to look into them and find alphas in the active funds.



## VII. Appendix

Exhibit 1:

Name	Ticker	Inception Date	Fund Link
TrueShares ESG Active Opportunities ETF	ECOZ	3/2/20	<a href="https://truesharesetfs.com/eco2">https://truesharesetfs.com/eco2</a>
American Century Sustainable Equity ETF	ESGA	7/15/20	<a href="https://ipro.americancentury.com/content/ipro/en/products/etfs/fund-list/american-century-sustainable-equity-etf.html">https://ipro.americancentury.com/content/ipro/en/products/etfs/fund-list/american-century-sustainable-equity-etf.html</a>
Inspire Faithward Large Cap Momentum ESG ETF	FEVR	12/8/20	<a href="https://www.inspireetf.com/fevr">https://www.inspireetf.com/fevr</a>
Inspire Faithward Mid Cap Momentum ESG ETF	GLRY	12/8/20	<a href="https://www.inspireetf.com/glry">https://www.inspireetf.com/glry</a>
Gabelli Love Our Planet & People	LOPP	2/1/21	<a href="https://www.gabelli.com/funds/etfs/5005">https://www.gabelli.com/funds/etfs/5005</a>
American Century Mid Cap Growth Impact ETF	MID	7/15/20	<a href="https://ipro.americancentury.com/content/ipro/en/products/etfs/fund-list/american-century-mid-cap-growth-impact-etf.html">https://ipro.americancentury.com/content/ipro/en/products/etfs/fund-list/american-century-mid-cap-growth-impact-etf.html</a>
WisdomTree US ESG Fund	RESP	2/23/07	<a href="https://www.wisdomtree.com/etfs/esg/resp">https://www.wisdomtree.com/etfs/esg/resp</a>
Stance Equity ESG Large Cap Core ETF	STNC	3/16/21	<a href="http://stancefunds.com/">http://stancefunds.com/</a>
Trend Aggregation ESG ETF	TEGS	3/16/21	<a href="https://www.tuttleetf.com/tegs/">https://www.tuttleetf.com/tegs/</a>

Exhibit 2:

Name	Annual Return	Annual Volatility(STDDEV)	Sharpe Ratio	Maximum Drawdown	Beta	Alpha	Information Ratio	Treynor Ratio	Sortino Ratio	ESG Start	ESG Last Day Of Data
ESGA	0.402	0.172	2.34	-0.098	1.041	-0.03	-0.178	0.386	3.036	07/15/2020	04/20/2021
SPY	0.416	0.159	2.604	-0.098	1.0	0.0	0.0	0.415	3.461	07/15/2020	04/20/2021
LOPP	0.505	0.119	4.247	-0.029	0.667	0.069	0.577	0.757	6.949	02/01/2021	04/20/2021
SPY	0.655	0.143	4.588	-0.041	1.0	0.0	0.0	0.654	7.225	02/01/2021	04/20/2021
IQSU	0.344	0.291	1.171	-0.313	0.959	0.09	0.307	0.356	1.324	12/17/2019	04/20/2021
SPY	0.265	0.299	0.879	-0.341	1.0	0.0	0.0	0.262	0.974	12/17/2019	04/20/2021
XVV	0.557	0.157	3.545	-0.077	0.991	0.004	0.028	0.562	4.885	09/24/2020	04/20/2021
SPY	0.558	0.155	3.6	-0.073	1.0	0.0	0.0	0.557	5.176	09/24/2020	04/20/2021
EFIV	0.424	0.168	2.528	-0.104	1.016	0.005	0.027	0.417	3.232	07/28/2020	04/20/2021
SPY	0.413	0.161	2.557	-0.098	1.0	0.0	0.0	0.413	3.391	07/28/2020	04/20/2021
ECOZ	0.425	0.288	1.47	-0.262	0.845	0.083	0.287	0.502	1.732	03/02/2020	04/20/2021
SPY	0.405	0.315	1.282	-0.287	1.0	0.0	0.0	0.404	1.438	03/02/2020	04/20/2021
USSG	0.264	0.256	0.997	-0.344	1.018	0.016	0.064	0.25	1.089	03/07/2019	04/20/2021
SPY	0.243	0.249	0.943	-0.341	1.0	0.0	0.0	0.234	1.028	03/07/2019	04/20/2021
SNPE	0.27	0.258	1.017	-0.338	0.96	0.025	0.095	0.274	1.144	06/26/2019	04/20/2021
SPY	0.255	0.264	0.939	-0.341	1.0	0.0	0.0	0.248	1.024	06/26/2019	04/20/2021
ESGS	0.105	0.218	0.432	-0.444	0.896	-0.048	-0.222	0.105	0.426	06/13/2016	04/20/2021
SPY	0.17	0.19	0.835	-0.341	1.0	0.0	0.0	0.159	0.912	06/13/2016	04/20/2021
ESNG	0.272	0.308	0.879	-0.302	0.929	0.016	0.052	0.291	1.07	02/06/2020	04/20/2021
PBUS	0.275	0.315	0.871	-0.336	1.0	0.0	0.0	0.274	0.979	02/06/2020	04/20/2021
USXF	0.47	0.176	2.674	-0.1	0.86	0.082	0.469	0.546	3.379	06/18/2020	04/20/2021
PBUS	0.451	0.169	2.662	-0.1	1.0	0.0	0.0	0.45	3.421	06/18/2020	04/20/2021
ESGU	0.193	0.201	0.9	-0.339	0.983	0.018	0.091	0.184	0.933	12/02/2016	04/20/2021
SPY	0.178	0.197	0.841	-0.341	1.0	0.0	0.0	0.165	0.916	12/02/2016	04/20/2021
SUSL	0.269	0.25	1.046	-0.343	0.899	0.035	0.139	0.291	1.156	05/10/2019	04/20/2021
PBUS	0.26	0.26	0.972	-0.336	1.0	0.0	0.0	0.252	1.061	05/10/2019	04/20/2021
SUSA	0.102	0.186	0.485	-0.549	0.907	0.009	0.049	0.1	0.588	01/28/2005	04/20/2021
SPY	0.102	0.196	0.456	-0.565	1.0	0.0	0.0	0.09	0.545	01/28/2005	04/20/2021
MXDU	0.155	0.199	0.714	-0.33	0.777	0.014	0.071	0.183	0.729	09/18/2017	04/20/2021
SPY	0.178	0.214	0.768	-0.341	1.0	0.0	0.0	0.165	0.845	09/18/2017	04/20/2021
NULC	0.29	0.26	1.089	-0.349	0.959	0.003	0.012	0.296	1.182	06/04/2019	04/20/2021
PBUS	0.299	0.263	1.114	-0.336	1.0	0.0	0.0	0.293	1.207	06/04/2019	04/20/2021
RAFE	0.191	0.306	0.615	-0.357	0.947	-0.086	-0.28	0.199	0.716	12/19/2019	04/20/2021
IWB	0.293	0.307	0.945	-0.346	1.0	0.0	0.0	0.29	1.038	12/19/2019	04/20/2021
STNC	0.078	0.112	0.694	-0.028	0.74	-0.229	-2.046	0.105	0.935	03/16/2021	04/20/2021
IWB	0.415	0.118	3.531	-0.025	1.0	0.0	0.0	0.415	5.629	03/16/2021	04/20/2021
ESG	0.182	0.201	0.848	-0.329	0.87	0.03	0.149	0.195	0.866	07/14/2016	04/20/2021
IWB	0.172	0.194	0.832	-0.346	1.0	0.0	0.0	0.161	0.902	07/14/2016	04/20/2021
MID	0.455	0.26	1.746	-0.173	1.16	-0.086	-0.33	0.392	2.434	07/15/2020	04/20/2021

IWP	0.466	0.214	2.173	-0.135	1.0	0.0	0.0	0.465	3.09	07/15/2020	04/20/2021
CHGX	0.199	0.218	0.851	-0.355	0.851	0.059	0.272	0.218	0.91	10/10/2017	04/20/2021
GSEW	0.162	0.224	0.663	-0.387	1.0	0.0	0.0	0.149	0.723	10/10/2017	04/20/2021
KRMA	0.177	0.199	0.833	-0.362	0.864	0.053	0.265	0.192	0.905	07/12/2016	04/20/2021
EQAL	0.142	0.206	0.637	-0.409	1.0	0.0	0.0	0.131	0.718	07/12/2016	04/20/2021
ISMD	0.128	0.269	0.43	-0.455	0.864	-0.01	-0.039	0.134	0.505	02/28/2017	04/20/2021
EWSC	0.159	0.28	0.522	-0.514	1.0	0.0	0.0	0.146	0.644	02/28/2017	04/20/2021
IQSI	0.158	0.27	0.575	-0.319	0.947	0.021	0.079	0.164	0.619	12/17/2019	04/20/2021
VEA	0.144	0.282	0.501	-0.356	1.0	0.0	0.0	0.141	0.527	12/17/2019	04/20/2021
ESML	0.188	0.268	0.653	-0.42	0.837	0.022	0.082	0.209	0.733	04/12/2018	04/20/2021
PBSM	0.195	0.276	0.663	-0.443	1.0	0.0	0.0	0.183	0.725	04/12/2018	04/20/2021
NUSC	0.169	0.237	0.663	-0.423	1.054	-0.009	-0.037	0.149	0.729	12/14/2016	04/20/2021
SPY	0.169	0.197	0.796	-0.341	1.0	0.0	0.0	0.157	0.868	12/14/2016	04/20/2021
XJH	1.065	0.199	5.361	-0.061	0.974	0.032	0.161	1.093	8.801	09/24/2020	04/20/2021
MDY	1.061	0.202	5.238	-0.064	1.0	0.0	0.0	1.06	8.858	09/24/2020	04/20/2021
MIDE	0.307	0.211	1.454	-0.059	0.91	-0.089	-0.422	0.337	2.205	02/24/2021	04/20/2021
MDY	0.435	0.225	1.933	-0.064	1.0	0.0	0.0	0.435	3.081	02/24/2021	04/20/2021
XJR	1.246	0.24	5.178	-0.093	0.979	-0.046	-0.189	1.272	9.703	09/24/2020	04/20/2021
SPSM	1.319	0.244	5.402	-0.095	1.0	0.0	0.0	1.318	10.05	09/24/2020	04/20/2021
SMLE	-0.028	0.257	-0.109	-0.096	0.913	-0.123	-0.479	-0.031	-0.179	02/24/2021	04/20/2021
SPSM	0.104	0.27	0.387	-0.095	1.0	0.0	0.0	0.104	0.674	02/24/2021	04/20/2021
NULG	0.255	0.212	1.142	-0.347	0.91	0.063	0.299	0.267	1.273	12/14/2016	04/20/2021
VOT	0.209	0.214	0.92	-0.364	1.0	0.0	0.0	0.197	1.029	12/14/2016	04/20/2021
NUMG	0.211	0.206	0.963	-0.334	0.873	0.027	0.13	0.227	1.109	12/14/2016	04/20/2021
VOT	0.209	0.214	0.92	-0.364	1.0	0.0	0.0	0.197	1.029	12/14/2016	04/20/2021
NULV	0.117	0.197	0.53	-0.37	0.824	0.03	0.153	0.127	0.561	12/14/2016	04/20/2021
VOE	0.102	0.221	0.406	-0.437	1.0	0.0	0.0	0.09	0.456	12/14/2016	04/20/2021
NUMV	0.11	0.222	0.439	-0.44	0.949	0.012	0.056	0.103	0.459	12/14/2016	04/20/2021
VOE	0.102	0.221	0.406	-0.437	1.0	0.0	0.0	0.09	0.456	12/14/2016	04/20/2021
ESGV	0.213	0.246	0.82	-0.339	1.013	0.033	0.134	0.199	0.929	09/20/2018	04/20/2021
SPY	0.178	0.241	0.692	-0.341	1.0	0.0	0.0	0.167	0.776	09/20/2018	04/20/2021
TEGS	0.105	0.171	0.605	-0.115	0.604	-0.188	-1.099	0.172	0.538	05/08/2020	04/20/2021
SPY	0.484	0.178	2.719	-0.098	1.0	0.0	0.0	0.483	3.356	05/08/2020	04/20/2021
FEVR	0.083	0.275	0.301	-0.174	1.41	-0.439	-1.595	0.059	0.384	12/08/2020	04/20/2021
SPY	0.371	0.14	2.652	-0.041	1.0	0.0	0.0	0.37	3.773	12/08/2020	04/20/2021
GLRY	0.507	0.347	1.461	-0.218	1.592	-0.082	-0.237	0.319	2.109	12/08/2020	04/20/2021
SPY	0.371	0.14	2.652	-0.041	1.0	0.0	0.0	0.37	3.773	12/08/2020	04/20/2021
AVDG	0.494	0.143	3.45	-0.056	0.923	0.1	0.697	0.534	5.049	12/30/2020	04/20/2021
SPY	0.427	0.147	2.897	-0.041	1.0	0.0	0.0	0.426	4.061	12/30/2020	04/20/2021
DSI	0.105	0.201	0.481	-0.551	0.898	0.014	0.069	0.107	0.578	11/17/2006	04/20/2021
SPY	0.101	0.205	0.449	-0.565	1.0	0.0	0.0	0.092	0.537	11/17/2006	04/20/2021
RESP	0.095	0.2	0.435	-0.568	0.799	0.014	0.069	0.109	0.518	02/23/2007	04/20/2021
SPY	0.099	0.206	0.444	-0.565	1.0	0.0	0.0	0.092	0.531	02/23/2007	04/20/2021

### Exhibit 3: Definitions of some metrics given by *Investopedia*:

#### Sortino Ratio:

The Sortino ratio takes an asset or portfolio's return and subtracts the risk-free rate, and then divides that amount by the asset's downside deviation.

#### Beta:

Beta is a measure of the volatility—or systematic risk—of a security or portfolio compared to the market as a whole.

#### Jensen Alpha:

The Jensen's measure, or Jensen's alpha, is a risk-adjusted performance measure that represents the average return on a portfolio or investment, above or below that predicted by the capital asset pricing model (CAPM), given the portfolio's or investment's beta and the average market return.

#### Sharpe Ratio:

The ratio is the average return earned in excess of the risk-free rate per unit of volatility or total risk.

#### Treynor Ratio:

The Treynor ratio, also known as the reward-to-volatility ratio, is a performance metric for determining how much excess return was generated for each unit of risk taken on by a portfolio.

#### Maximum Drawdown:

A maximum drawdown (MDD) is the maximum observed loss from a peak to a trough of a portfolio, before a new peak is attained. Maximum drawdown is an indicator of downside risk over a specified time period.

#### Information Ratio:

The information ratio (IR) is a measurement of portfolio returns beyond the returns of a benchmark, usually an index, compared to the volatility of those returns. It attempts to identify the consistency of the performance by incorporating a tracking error, or standard deviation component into the calculation.

#### Exhibit 4:

Name	Annual Return	Annual Volatility(STDDEV)	Sharpe Ratio	Maximum Drawdown	Beta	Alpha	Information Ratio	Treynor Ratio	Sortino Ratio	ESG Start	ESG Last Day Of Data
ESGA	0.402	0.172	2.34	-0.098	1.041	-0.03	-0.178	0.386	3.036	07/15/2020	04/20/2021
SPY	0.416	0.159	2.604	-0.098	1.0	0.0	0.0	0.415	3.461	07/15/2020	04/20/2021
LOPP	0.505	0.119	4.247	-0.029	0.667	0.069	0.577	0.757	6.949	02/01/2021	04/20/2021
SPY	0.655	0.143	4.588	-0.041	1.0	0.0	0.0	0.654	7.225	02/01/2021	04/20/2021
ECOZ	0.425	0.288	1.47	-0.262	0.845	0.083	0.287	0.502	1.732	03/02/2020	04/20/2021
SPY	0.405	0.315	1.282	-0.287	1.0	0.0	0.0	0.404	1.438	03/02/2020	04/20/2021
STNC	0.078	0.112	0.694	-0.028	0.74	-0.229	-2.046	0.105	0.935	03/16/2021	04/20/2021
IWB	0.415	0.118	3.531	-0.025	1.0	0.0	0.0	0.415	5.629	03/16/2021	04/20/2021
MID	0.455	0.26	1.746	-0.173	1.16	-0.086	-0.33	0.392	2.434	07/15/2020	04/20/2021
IWP	0.466	0.214	2.173	-0.135	1.0	0.0	0.0	0.465	3.09	07/15/2020	04/20/2021
TEGS	0.105	0.171	0.605	-0.115	0.604	-0.188	-1.099	0.172	0.538	05/08/2020	04/20/2021
SPY	0.484	0.178	2.719	-0.098	1.0	0.0	0.0	0.483	3.356	05/08/2020	04/20/2021
FEVR	0.083	0.275	0.301	-0.174	1.41	-0.439	-1.595	0.059	0.384	12/08/2020	04/20/2021
SPY	0.371	0.14	2.652	-0.041	1.0	0.0	0.0	0.37	3.773	12/08/2020	04/20/2021
GLRY	0.507	0.347	1.461	-0.218	1.592	-0.082	-0.237	0.319	2.109	12/08/2020	04/20/2021
SPY	0.371	0.14	2.652	-0.041	1.0	0.0	0.0	0.37	3.773	12/08/2020	04/20/2021
RESP	0.095	0.2	0.435	-0.568	0.799	0.014	0.069	0.109	0.518	02/23/2007	04/20/2021
SPY	0.099	0.206	0.444	-0.565	1.0	0.0	0.0	0.092	0.531	02/23/2007	04/20/2021

#### Exhibit 5:

ESG Name	Benchmark	Return_diff	Volatility_diff	Sharpe Ratio_diff	Mmd_diff	ESG Start
ESGA	SPY	-0.014	0.013	-0.264	0	7/15/20
LOPP	SPY	-0.15	-0.024	-0.341	0.012	2/1/21
IQSU	SPY	0.079	-0.008	0.292	0.028	12/17/19
XVV	SPY	-0.001	0.002	-0.055	-0.004	9/24/20

EFIV	SPY	0.011	0.007	-0.029	-0.006	7/28/20
ECOZ	SPY	0.02	-0.027	0.188	0.025	3/2/20
USSG	SPY	0.021	0.007	0.054	-0.003	3/7/19
SNPE	SPY	0.015	-0.006	0.078	0.003	6/26/19
ESGS	SPY	-0.065	0.028	-0.403	-0.103	6/13/16
ESNG	PBUS	-0.003	-0.007	0.008	0.034	2/6/20
USXF	PBUS	0.019	0.007	0.012	0	6/18/20
ESGU	SPY	0.015	0.004	0.059	0.002	12/2/16
SUSL	PBUS	0.009	-0.01	0.074	-0.007	5/10/19
SUSA	SPY	0	-0.01	0.029	0.016	1/28/05
MXDU	SPY	-0.023	-0.015	-0.054	0.011	9/18/17
NULC	PBUS	-0.009	-0.003	-0.025	-0.013	6/4/19
RAFE	IWB	-0.102	-0.001	-0.33	-0.011	12/19/19
STNC	IWB	-0.337	-0.006	-2.837	-0.003	3/16/21
ESG	IWB	0.01	0.007	0.016	0.017	7/14/16
MID	IWP	-0.011	0.046	-0.427	-0.038	7/15/20
CHGX	GSEW	0.037	-0.006	0.188	0.032	10/10/17
KRMA	EQAL	0.035	-0.007	0.196	0.047	7/12/16
ISMD	EWSC	-0.031	-0.011	-0.092	0.059	2/28/17
IQSI	VEA	0.014	-0.012	0.074	0.037	12/17/19
ESML	PBSM	-0.007	-0.008	-0.01	0.023	4/12/18
NUSC	SPY	0	0.04	-0.133	-0.082	12/14/16
XJH	MDY	0.004	-0.003	0.123	0.003	9/24/20
MIDE	MDY	-0.128	-0.014	-0.479	0.005	2/24/21
XJR	SPSM	-0.073	-0.004	-0.224	0.002	9/24/20
SMLE	SPSM	-0.132	-0.013	-0.496	-0.001	2/24/21
NULG	VOT	0.046	-0.002	0.222	0.017	12/14/16
NUMG	VOT	0.002	-0.008	0.043	0.03	12/14/16
NULV	VOE	0.015	-0.024	0.124	0.067	12/14/16
NUMV	VOE	0.008	0.001	0.033	-0.003	12/14/16
ESGV	SPY	0.035	0.005	0.128	0.002	9/20/18
TEGS	SPY	-0.379	-0.007	-2.114	-0.017	5/8/20
FEVR	SPY	-0.288	0.135	-2.351	-0.133	12/8/20
GLRY	SPY	0.136	0.207	-1.191	-0.177	12/8/20
AVDG	SPY	0.067	-0.004	0.553	-0.015	12/30/20
DSI	SPY	0.004	-0.004	0.032	0.014	11/17/06
RESP	SPY	-0.004	-0.006	-0.009	-0.003	2/23/07

Exhibit 6:

ESG funds daily return correlation matrix since Jan 1<sup>st</sup>, 2020

	ESGS	KRMA	ESG	ESGU	NULG	NULV	NUMG	NUMV	NUSC	ISMD	MXDU	CHGX	ESML	ESGV	USSG	SUSL	NULC	SNPE	IQSI	IQSU	RAFE	SUSA	DSI	RESP
ESGS	1.00	0.88	0.90	0.90	0.82	0.97	0.81	0.97	0.94	0.94	0.86	0.86	0.95	0.89	0.91	0.90	0.91	0.88	0.90	0.87	0.97	0.90	0.90	0.91
KRMA	0.88	1.00	0.93	0.93	0.90	0.91	0.88	0.89	0.88	0.84	0.91	0.87	0.89	0.93	0.93	0.92	0.93	0.92	0.88	0.92	0.92	0.93	0.93	0.93
ESG	0.90	0.93	1.00	0.99	0.96	0.95	0.93	0.91	0.91	0.86	0.95	0.91	0.92	0.99	0.99	0.97	0.98	0.99	0.92	0.99	0.96	0.98	0.99	0.99
ESGU	0.90	0.93	0.99	1.00	0.96	0.95	0.93	0.92	0.92	0.86	0.95	0.91	0.92	0.99	0.99	0.97	0.98	0.98	0.92	0.98	0.95	0.99	1.00	0.98
NULG	0.82	0.90	0.96	0.96	1.00	0.87	0.97	0.84	0.86	0.77	0.94	0.91	0.87	0.97	0.96	0.95	0.97	0.96	0.88	0.97	0.88	0.96	0.97	0.96
NULV	0.97	0.91	0.95	0.95	0.87	1.00	0.86	0.97	0.94	0.92	0.90	0.87	0.94	0.94	0.96	0.93	0.95	0.93	0.92	0.92	0.99	0.95	0.95	0.94
NUMG	0.81	0.88	0.93	0.93	0.97	0.86	1.00	0.84	0.86	0.77	0.94	0.91	0.87	0.95	0.93	0.93	0.95	0.92	0.86	0.94	0.87	0.94	0.93	0.94
NUMV	0.97	0.89	0.91	0.92	0.84	0.97	0.84	1.00	0.97	0.95	0.89	0.86	0.97	0.91	0.92	0.91	0.92	0.89	0.91	0.88	0.96	0.91	0.91	0.92
NUSC	0.94	0.88	0.91	0.92	0.86	0.94	0.86	0.97	1.00	0.96	0.91	0.85	0.99	0.93	0.93	0.90	0.92	0.89	0.92	0.89	0.94	0.91	0.92	0.92
ISMD	0.94	0.84	0.86	0.86	0.77	0.92	0.77	0.95	0.96	1.00	0.83	0.78	0.95	0.86	0.87	0.85	0.86	0.82	0.89	0.82	0.92	0.85	0.85	0.86
MXDU	0.86	0.91	0.95	0.95	0.94	0.90	0.94	0.89	0.91	0.83	1.00	0.90	0.91	0.96	0.95	0.93	0.95	0.94	0.89	0.95	0.91	0.95	0.95	0.95
CHGX	0.86	0.87	0.91	0.91	0.91	0.87	0.91	0.86	0.85	0.78	0.90	1.00	0.87	0.92	0.90	0.92	0.92	0.91	0.84	0.91	0.89	0.92	0.91	0.92
ESML	0.95	0.89	0.92	0.92	0.87	0.94	0.87	0.97	0.99	0.95	0.91	0.87	1.00	0.93	0.93	0.92	0.93	0.90	0.92	0.90	0.95	0.92	0.92	0.93
ESGV	0.89	0.93	0.99	0.99	0.97	0.94	0.95	0.91	0.93	0.86	0.96	0.92	0.93	1.00	0.99	0.98	0.98	0.98	0.92	0.99	0.95	0.99	0.99	0.99
USSG	0.91	0.93	0.99	0.99	0.96	0.96	0.93	0.92	0.93	0.87	0.95	0.90	0.93	0.99	1.00	0.98	0.98	0.98	0.93	0.98	0.96	0.99	1.00	0.98
SUSL	0.90	0.92	0.97	0.97	0.95	0.93	0.93	0.91	0.90	0.85	0.93	0.92	0.92	0.98	0.98	1.00	0.97	0.96	0.92	0.96	0.95	0.97	0.97	0.98
NULC	0.91	0.93	0.98	0.98	0.97	0.95	0.95	0.92	0.92	0.86	0.95	0.92	0.93	0.98	0.98	0.97	1.00	0.97	0.93	0.98	0.96	0.98	0.98	0.98
SNPE	0.88	0.92	0.99	0.98	0.96	0.93	0.92	0.89	0.89	0.82	0.94	0.91	0.90	0.98	0.98	0.96	0.97	1.00	0.89	0.98	0.94	0.98	0.98	0.97
IQSI	0.90	0.88	0.92	0.92	0.88	0.92	0.86	0.91	0.92	0.89	0.89	0.84	0.92	0.92	0.93	0.92	0.93	0.89	1.00	0.91	0.93	0.91	0.92	0.92
IQSU	0.87	0.92	0.99	0.98	0.97	0.92	0.94	0.88	0.89	0.82	0.95	0.91	0.90	0.99	0.98	0.96	0.98	0.98	0.91	1.00	0.93	0.98	0.98	0.98
RAFE	0.97	0.92	0.96	0.95	0.88	0.99	0.87	0.96	0.94	0.92	0.91	0.89	0.95	0.95	0.96	0.95	0.96	0.94	0.93	0.93	1.00	0.95	0.95	0.95
SUSA	0.90	0.93	0.98	0.99	0.96	0.95	0.94	0.91	0.91	0.85	0.95	0.92	0.92	0.99	0.99	0.97	0.98	0.98	0.91	0.98	0.95	1.00	0.99	0.99
DSI	0.90	0.93	0.99	1.00	0.97	0.95	0.93	0.91	0.92	0.85	0.95	0.91	0.92	0.99	1.00	0.97	0.98	0.98	0.92	0.98	0.95	0.99	1.00	0.98
RESP	0.91	0.93	0.99	0.98	0.96	0.94	0.94	0.92	0.92	0.86	0.95	0.92	0.93	0.99	0.98	0.98	0.98	0.97	0.92	0.98	0.95	0.99	0.98	1.00

Exhibit 7:

	SUSA	DSI	RESP
SUSA	1	0.93	0.85
DSI	0.93	1	0.84
RESP	0.85	0.84	1

Exhibit 8:

ESG Name	Intercept	Mkt_RF	SMB	HML	RMW	CMA	Intercept t_value	Mkt_RF t_value	SMB t_value	HML t_value	RMW t_value	CMA t_value
ESGS	-0.072	1.048	0.058	0.4	0.034	-0.026	-0.309	18.048	0.566	4.882	0.19	-0.179
KRMA	0.008	0.962	-0.027	0.054	0.097	0.088	0.085	40.819	-0.633	1.61	1.34	1.471
ESG	0.025	0.996	-0.146	-0.011	0.109	0.146	0.298	47.657	-3.932	-0.388	1.694	2.746
ESGU	0.034	0.977	-0.098	0.019	0.028	0.021	0.683	85.883	-4.57	1.075	0.772	0.687
NULG	0.166	0.986	0.115	-0.249	0.02	-0.208	0.777	20.258	1.247	-3.232	0.131	-1.611
NULV	-0.056	0.902	-0.151	0.348	-0.149	-0.017	-0.356	24.947	-2.211	6.078	-1.285	-0.172
NUMG	-0.021	1.044	0.186	-0.184	-0.248	-0.192	-0.079	17.036	1.601	-1.892	-1.261	-1.181
NUMV	0.047	0.942	0.133	0.511	0.005	-0.065	0.214	18.741	1.398	6.411	0.031	-0.489
NUSC	0.058	0.991	0.63	0.156	-0.193	-0.119	0.376	28.203	9.469	2.809	-1.709	-1.273
ISMD	-0.221	1.019	0.616	0.229	-0.393	0.036	-1.19	24.001	7.587	3.424	-2.885	0.317
MXDU	-0.164	0.981	-0.011	-0.107	-0.246	0.205	-0.634	17.4	-0.1	-1.183	-1.273	1.355
CHGX	0.138	1.014	-0.178	0.116	-0.142	-0.154	0.771	26.681	-2.276	1.836	-1.084	-1.411
ESML	0.103	1.004	0.574	0.204	-0.204	-0.207	0.707	30.069	8.093	4.103	-1.676	-2.407
ESGV	0.106	0.98	-0.05	-0.023	0.041	-0.02	1.843	76.183	-1.742	-1.166	0.871	-0.592
USSG	0.001	0.925	-0.093	0.026	0.016	-0.03	0.004	32.517	-1.468	0.593	0.157	-0.425
SUSL	0.046	0.932	-0.11	0.071	-0.012	-0.11	0.283	29.567	-1.562	1.458	-0.115	-1.399
NULC	0.279	0.965	-0.041	0.063	0.074	0.056	1.162	20.572	-0.399	0.869	0.471	0.485
SNPE	0.041	0.986	-0.206	0.001	0.047	0.164	0.351	43.42	-4.113	0.032	0.616	2.918
IQSI	-1.714	0.877	0.294	-0.15	-0.535	-0.271	-1.577	6.148	0.828	-0.572	-1.059	-0.704
IQSU	0.317	0.973	-0.127	-0.123	0.197	0.236	1.098	25.691	-1.348	-1.76	1.471	2.309
RAFE	-0.799	0.952	0.065	0.184	-0.31	-0.066	-1.116	10.125	0.277	1.063	-0.93	-0.26
ESNG	-0.196	0.932	-0.194	-0.212	0.017	0.327	-0.26	8.452	-0.688	-1.179	0.04	1.053
ECOZ	0.282	0.999	-0.174	-0.165	-0.327	-0.076	0.355	9.359	-0.668	-0.93	-0.867	-0.267
TEGS	-0.514	0.584	0.044	0.035	-0.025	0.13	-1.16	9.454	0.277	0.306	-0.116	0.738
USXF	1.208	1.033	-0.572	0.257	-0.157	0.128	6.393	39.219	-8.394	4.93	-1.67	1.721
MID	-0.986	0.65	0.803	-0.599	-0.497	-0.605	-0.66	5.744	1.325	-2.175	-1.167	-1.947
ESGA	1.118	1.07	-0.658	0.238	-0.288	0.15	0.921	11.649	-1.337	1.063	-0.832	0.594
EFIV	0.58	1.005	-0.363	0.131	0.124	0.328	0.666	15.274	-1.03	0.816	0.501	1.814
XJH	-1.663	0.904	1.983	-0.464	2.635	-0.108	0.0	0.0	0.0	0.0	0.0	0.0
XJR	-0.698	1.01	1.305	-0.067	0.948	0.231	0.0	0.0	0.0	0.0	0.0	0.0
XVV	0.525	0.9	-0.46	0.194	-0.768	-0.296	0.0	0.0	0.0	0.0	0.0	0.0
FEVR	0.019	0.104	0.042	0.21	0.064	-0.158	0.0	0.0	0.0	0.0	0.0	0.0
GLRY	0.124	-0.311	1.108	-0.104	-0.782	1.3	0.0	0.0	0.0	0.0	0.0	0.0
AVDG	0.021	0.083	0.073	0.184	0.032	-0.1	0.0	0.0	0.0	0.0	0.0	0.0
SUSA	-0.069	0.984	-0.076	-0.019	0.035	0.006	-1.325	74.667	-3.302	-0.868	1.013	0.163
DSI	-0.021	0.963	-0.05	0.059	0.055	-0.058	-0.338	63.881	-1.827	2.281	1.378	-1.243
RESP	-0.023	0.984	-0.013	0.162	0.119	-0.097	-0.277	50.522	-0.358	4.826	2.32	-1.625

Exhibit 9:

Name	Maximum Drawdown	Annual Volatility(STDDEV)	1% Annualized VaR	5% Annualized VaR	ESG Start	ESG Last Day Of Data
ESGA	-0.098	0.172	-0.488	-0.29	07/15/2020	04/20/2021
SPY	-0.098	0.159	-0.442	-0.243	07/15/2020	04/20/2021
LOPP	-0.029	0.119	-0.249	-0.165	02/01/2021	04/20/2021
SPY	-0.041	0.143	-0.301	-0.201	02/01/2021	04/20/2021
IQSU	-0.313	0.291	-0.847	-0.468	12/17/2019	04/20/2021
SPY	-0.341	0.299	-0.875	-0.438	12/17/2019	04/20/2021
XVV	-0.077	0.157	-0.399	-0.252	09/24/2020	04/20/2021
SPY	-0.073	0.155	-0.386	-0.225	09/24/2020	04/20/2021
EFIV	-0.104	0.168	-0.505	-0.287	07/28/2020	04/20/2021
SPY	-0.098	0.161	-0.452	-0.245	07/28/2020	04/20/2021
ECOZ	-0.262	0.288	-0.864	-0.471	03/02/2020	04/20/2021
SPY	-0.287	0.315	-0.961	-0.43	03/02/2020	04/20/2021

USSG	-0.344	0.256	-0.753	-0.387	03/07/2019	04/20/2021
SPY	-0.341	0.249	-0.774	-0.379	03/07/2019	04/20/2021
SNPE	-0.338	0.258	-0.8	-0.408	06/26/2019	04/20/2021
SPY	-0.341	0.264	-0.787	-0.405	06/26/2019	04/20/2021
ESGS	-0.444	0.218	-0.643	-0.307	06/13/2016	04/20/2021
SPY	-0.341	0.19	-0.546	-0.276	06/13/2016	04/20/2021
ESNG	-0.302	0.308	-0.916	-0.468	02/06/2020	04/20/2021
PBUS	-0.336	0.315	-1.037	-0.494	02/06/2020	04/20/2021
USXF	-0.1	0.176	-0.504	-0.267	06/18/2020	04/20/2021
PBUS	-0.1	0.169	-0.497	-0.285	06/18/2020	04/20/2021
ESGU	-0.339	0.201	-0.564	-0.289	12/02/2016	04/20/2021
SPY	-0.341	0.197	-0.546	-0.281	12/02/2016	04/20/2021
SUSL	-0.343	0.25	-0.8	-0.39	05/10/2019	04/20/2021
PBUS	-0.336	0.26	-0.924	-0.42	05/10/2019	04/20/2021
SUSA	-0.549	0.186	-0.544	-0.274	01/28/2005	04/20/2021
SPY	-0.565	0.196	-0.58	-0.287	01/28/2005	04/20/2021
MXDU	-0.33	0.199	-0.603	-0.298	09/18/2017	04/20/2021
SPY	-0.341	0.214	-0.663	-0.318	09/18/2017	04/20/2021
NULC	-0.349	0.26	-0.782	-0.418	06/04/2019	04/20/2021
PBUS	-0.336	0.263	-0.938	-0.437	06/04/2019	04/20/2021
RAFE	-0.357	0.306	-0.993	-0.449	12/19/2019	04/20/2021
IWB	-0.346	0.307	-0.906	-0.446	12/19/2019	04/20/2021
STNC	-0.028	0.112	-0.261	-0.13	03/16/2021	04/20/2021
IWB	-0.025	0.118	-0.224	-0.134	03/16/2021	04/20/2021
ESG	-0.329	0.201	-0.568	-0.28	07/14/2016	04/20/2021
IWB	-0.346	0.194	-0.531	-0.274	07/14/2016	04/20/2021
MID	-0.173	0.26	-0.68	-0.4	07/15/2020	04/20/2021
IWP	-0.135	0.214	-0.561	-0.348	07/15/2020	04/20/2021
CHGX	-0.355	0.218	-0.691	-0.346	10/10/2017	04/20/2021
GSEW	-0.387	0.224	-0.615	-0.331	10/10/2017	04/20/2021
KRMA	-0.362	0.199	-0.539	-0.301	07/12/2016	04/20/2021
EQAL	-0.409	0.206	-0.58	-0.281	07/12/2016	04/20/2021
ISMD	-0.455	0.269	-0.642	-0.351	02/28/2017	04/20/2021
EWSC	-0.514	0.28	-0.763	-0.378	02/28/2017	04/20/2021
IQSI	-0.319	0.27	-0.857	-0.361	12/17/2019	04/20/2021
VEA	-0.356	0.282	-0.918	-0.353	12/17/2019	04/20/2021
ESML	-0.42	0.268	-0.648	-0.386	04/12/2018	04/20/2021
PBSM	-0.443	0.276	-0.712	-0.408	04/12/2018	04/20/2021
NUSC	-0.423	0.237	-0.569	-0.316	12/14/2016	04/20/2021
SPY	-0.341	0.197	-0.55	-0.281	12/14/2016	04/20/2021
XJH	-0.061	0.199	-0.415	-0.28	09/24/2020	04/20/2021
MDY	-0.064	0.202	-0.42	-0.305	09/24/2020	04/20/2021
MIDE	-0.059	0.211	-0.443	-0.373	02/24/2021	04/20/2021
MDY	-0.064	0.225	-0.462	-0.344	02/24/2021	04/20/2021
XJR	-0.093	0.24	-0.482	-0.337	09/24/2020	04/20/2021
SPSM	-0.095	0.244	-0.49	-0.35	09/24/2020	04/20/2021
SMLE	-0.096	0.257	-0.533	-0.38	02/24/2021	04/20/2021
SPSM	-0.095	0.27	-0.538	-0.401	02/24/2021	04/20/2021
NULG	-0.347	0.212	-0.61	-0.343	12/14/2016	04/20/2021
VOT	-0.364	0.214	-0.581	-0.312	12/14/2016	04/20/2021
NUMG	-0.334	0.206	-0.594	-0.342	12/14/2016	04/20/2021
VOT	-0.364	0.214	-0.581	-0.312	12/14/2016	04/20/2021
NULV	-0.37	0.197	-0.572	-0.272	12/14/2016	04/20/2021
VOE	-0.437	0.221	-0.599	-0.31	12/14/2016	04/20/2021
NUMV	-0.44	0.222	-0.574	-0.312	12/14/2016	04/20/2021
VOE	-0.437	0.221	-0.599	-0.31	12/14/2016	04/20/2021
ESGV	-0.339	0.246	-0.724	-0.389	09/20/2018	04/20/2021
SPY	-0.341	0.241	-0.745	-0.378	09/20/2018	04/20/2021
TEGS	-0.115	0.171	-0.511	-0.257	05/08/2020	04/20/2021
SPY	-0.098	0.178	-0.501	-0.282	05/08/2020	04/20/2021
FEVR	-0.174	0.275	-0.724	-0.519	12/08/2020	04/20/2021
SPY	-0.041	0.14	-0.383	-0.213	12/08/2020	04/20/2021
GLRY	-0.218	0.347	-0.816	-0.654	12/08/2020	04/20/2021
SPY	-0.041	0.14	-0.383	-0.213	12/08/2020	04/20/2021
AVDG	-0.056	0.143	-0.368	-0.216	12/30/2020	04/20/2021
SPY	-0.041	0.147	-0.384	-0.22	12/30/2020	04/20/2021
DSI	-0.551	0.201	-0.604	-0.285	11/17/2006	04/20/2021
SPY	-0.565	0.205	-0.641	-0.308	11/17/2006	04/20/2021
RESP	-0.568	0.2	-0.605	-0.301	02/23/2007	04/20/2021
SPY	-0.565	0.206	-0.65	-0.311	02/23/2007	04/20/2021

Exhibit 10:

Name	Annual Return	Annual Volatility(STDDEV)	Sharpe Ratio	Maximum Drawdown	Beta	Alpha	Information Ratio	Treynor Ratio	Sortino Ratio	ESG Start	ESG Last Day Of Data
ESGS	0.105	0.218	0.432	-0.444	0.896	-0.048	-0.222	0.105	0.426	6/13/16	4/20/21
SPY	0.17	0.19	0.835	-0.341	1	0	0	0.159	0.912	6/13/16	4/20/21
ESGU	0.193	0.201	0.9	-0.339	0.983	0.018	0.091	0.184	0.933	12/2/16	4/20/21
SPY	0.178	0.197	0.841	-0.341	1	0	0	0.165	0.916	12/2/16	4/20/21
SUSA	0.102	0.186	0.485	-0.549	0.907	0.009	0.049	0.1	0.588	1/28/05	4/20/21
SPY	0.102	0.196	0.456	-0.565	1	0	0	0.09	0.545	1/28/05	4/20/21
ESG	0.182	0.201	0.848	-0.329	0.87	0.03	0.149	0.195	0.866	7/14/16	4/20/21
IWB	0.172	0.194	0.832	-0.346	1	0	0	0.161	0.902	7/14/16	4/20/21
KRMA	0.177	0.199	0.833	-0.362	0.864	0.053	0.265	0.192	0.905	7/12/16	4/20/21
EQAL	0.142	0.206	0.637	-0.409	1	0	0	0.131	0.718	7/12/16	4/20/21
ISMD	0.128	0.269	0.43	-0.455	0.864	-0.01	-0.039	0.134	0.505	2/28/17	4/20/21
EWSC	0.159	0.28	0.522	-0.514	1	0	0	0.146	0.644	2/28/17	4/20/21
NUSC	0.169	0.237	0.663	-0.423	1.054	-0.009	-0.037	0.149	0.729	12/14/16	4/20/21
SPY	0.169	0.197	0.796	-0.341	1	0	0	0.157	0.868	12/14/16	4/20/21
NULG	0.255	0.212	1.142	-0.347	0.91	0.063	0.299	0.267	1.273	12/14/16	4/20/21
VOT	0.209	0.214	0.92	-0.364	1	0	0	0.197	1.029	12/14/16	4/20/21
NUMG	0.211	0.206	0.963	-0.334	0.873	0.027	0.13	0.227	1.109	12/14/16	4/20/21
VOT	0.209	0.214	0.92	-0.364	1	0	0	0.197	1.029	12/14/16	4/20/21
NULV	0.117	0.197	0.53	-0.37	0.824	0.03	0.153	0.127	0.561	12/14/16	4/20/21
VOE	0.102	0.221	0.406	-0.437	1	0	0	0.09	0.456	12/14/16	4/20/21
NUMV	0.11	0.222	0.439	-0.44	0.949	0.012	0.056	0.103	0.459	12/14/16	4/20/21
VOE	0.102	0.221	0.406	-0.437	1	0	0	0.09	0.456	12/14/16	4/20/21
DSI	0.105	0.201	0.481	-0.551	0.898	0.014	0.069	0.107	0.578	11/17/06	4/20/21
SPY	0.101	0.205	0.449	-0.565	1	0	0	0.092	0.537	11/17/06	4/20/21
RESP	0.095	0.2	0.435	-0.568	0.799	0.014	0.069	0.109	0.518	2/23/07	4/20/21
SPY	0.099	0.206	0.444	-0.565	1	0	0	0.092	0.531	2/23/07	4/20/21

Exhibit 11:

Name	Maximum Drawdown	Annual Volatility(STDDEV)	1% Annualized VaR	5% Annualized VaR	ESG Start	ESG Last Day Of Data
ESGS	-0.444	0.218	-0.643	-0.307	6/13/16	4/20/21
SPY	-0.341	0.19	-0.546	-0.276	6/13/16	4/20/21
ESGU	-0.339	0.201	-0.564	-0.289	12/2/16	4/20/21
SPY	-0.341	0.197	-0.546	-0.281	12/2/16	4/20/21
SUSA	-0.549	0.186	-0.544	-0.274	1/28/05	4/20/21
SPY	-0.565	0.196	-0.58	-0.287	1/28/05	4/20/21
ESG	-0.329	0.201	-0.568	-0.28	7/14/16	4/20/21
IWB	-0.346	0.194	-0.531	-0.274	7/14/16	4/20/21
KRMA	-0.362	0.199	-0.539	-0.301	7/12/16	4/20/21
EQAL	-0.409	0.206	-0.58	-0.281	7/12/16	4/20/21
ISMD	-0.455	0.269	-0.642	-0.351	2/28/17	4/20/21
EWSC	-0.514	0.28	-0.763	-0.378	2/28/17	4/20/21
NUSC	-0.423	0.237	-0.569	-0.316	12/14/16	4/20/21
SPY	-0.341	0.197	-0.55	-0.281	12/14/16	4/20/21
NULG	-0.347	0.212	-0.61	-0.343	12/14/16	4/20/21
VOT	-0.364	0.214	-0.581	-0.312	12/14/16	4/20/21
NUMG	-0.334	0.206	-0.594	-0.342	12/14/16	4/20/21
VOT	-0.364	0.214	-0.581	-0.312	12/14/16	4/20/21
NULV	-0.37	0.197	-0.572	-0.272	12/14/16	4/20/21
VOE	-0.437	0.221	-0.599	-0.31	12/14/16	4/20/21
NUMV	-0.44	0.222	-0.574	-0.312	12/14/16	4/20/21
VOE	-0.437	0.221	-0.599	-0.31	12/14/16	4/20/21
DSI	-0.551	0.201	-0.604	-0.285	11/17/06	4/20/21
SPY	-0.565	0.205	-0.641	-0.308	11/17/06	4/20/21
RESP	-0.568	0.2	-0.605	-0.301	2/23/07	4/20/21
SPY	-0.565	0.206	-0.65	-0.311	2/23/07	4/20/21

Exhibit 12:

ESG Name	Intercept	Mkt_RF	SMB	HML	RMW	CMA	Intercept t_value	Mkt_RF t_value	SMB t_value	HML t_value	RMW t_value	CMA t_value
ESGS	-0.072	1.048	0.058	0.4	0.034	-0.026	-0.309	18.048	0.566	4.882	0.19	-0.179
KRMA	0.008	0.962	-0.027	0.054	0.097	0.088	0.085	40.819	-0.633	1.61	1.34	1.471



ESG	0.025	0.996	-0.146	-0.011	0.109	0.146	0.298	47.657	-3.932	-0.388	1.694	2.746
ESGU	0.034	0.977	-0.098	0.019	0.028	0.021	0.683	85.883	-4.57	1.075	0.772	0.687
NULG	0.166	0.986	0.115	-0.249	0.02	-0.208	0.777	20.258	1.247	-3.232	0.131	-1.611
NULV	-0.056	0.902	-0.151	0.348	-0.149	-0.017	-0.356	24.947	-2.211	6.078	-1.285	-0.172
NUMG	-0.021	1.044	0.186	-0.184	-0.248	-0.192	-0.079	17.036	1.601	-1.892	-1.261	-1.181
NUMV	0.047	0.942	0.133	0.511	0.005	-0.065	0.214	18.741	1.398	6.411	0.031	-0.489
NUSC	0.058	0.991	0.63	0.156	-0.193	-0.119	0.376	28.203	9.469	2.809	-1.709	-1.273
ISMD	-0.221	1.019	0.616	0.229	-0.393	0.036	-1.19	24.001	7.587	3.424	-2.885	0.317
SUSA	-0.069	0.984	-0.076	-0.019	0.035	0.006	-1.325	74.667	-3.302	-0.868	1.013	0.163
DSI	-0.021	0.963	-0.05	0.059	0.055	-0.058	-0.338	63.881	-1.827	2.281	1.378	-1.243
RESP	-0.023	0.984	-0.013	0.162	0.119	-0.097	-0.277	50.522	-0.358	4.826	2.32	-1.625

Exhibit 13:





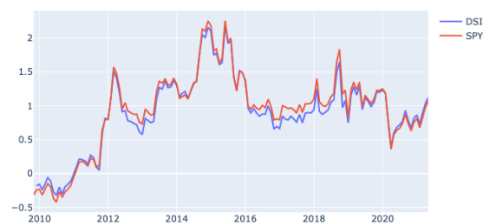
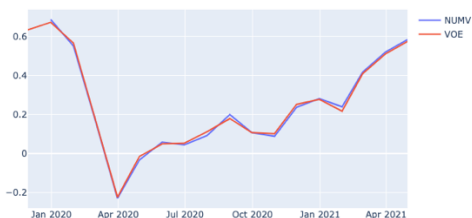
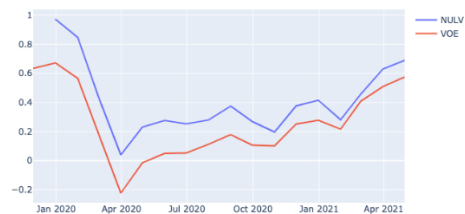
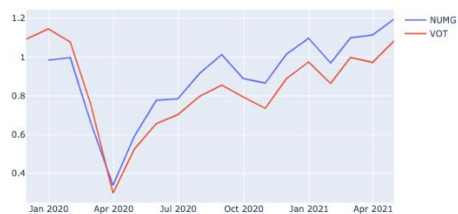


Exhibit 14:

Fund	Difference	P-value
DSI	-0.004	0.772
ESG	0.016	0.573
ESGS	-0.403	0.1562
ESGU	0.059	0.255
ISMD	-0.092	0.883
KRMA	0.196	0.038
NULG	0.222	0.076
NULV	0.124	0.387
NUMG	0.043	0.814
NUSC	-0.133	0.379
RESP	-0.009	0.455

Exhibit 15:



Exhibit 16:

Name	Type	Annual Return	Annual Volatility(STDDEV)	Sharpe Ratio	Maximum Drawdown	Beta	Alpha	Information Ratio	Treynor Ratio	Sortino Ratio	Start	End
ESG_T60	Mkt_Cap Weighted_r	0.192	0.196	0.984	-0.301	1.037	0.064	0.329	0.176	1.102	2015-01-02	2020-12-31
ESG_T60	Eq Weighted_r	0.165	0.196	0.842	-0.347	1.028	0.038	0.192	0.151	0.931	2015-01-02	2020-12-31
ESG_B60	Mkt_Cap Weighted_r	0.14	0.209	0.668	-0.391	1.053	0.01	0.047	0.124	0.715	2015-01-02	2020-12-31
ESG_B60	Eq Weighted_r	0.102	0.23	0.443	-0.437	1.017	-0.024	-0.104	0.091	0.478	2015-01-02	2020-12-31
ESG_T30	Mkt_Cap Weighted_r	0.196	0.202	0.968	-0.298	1.048	0.066	0.328	0.178	1.087	2015-01-02	2020-12-31
ESG_T30	Eq Weighted_r	0.168	0.2	0.839	-0.36	1.054	0.038	0.189	0.15	0.924	2015-01-02	2020-12-31
ESG_B30	Mkt_Cap Weighted_r	0.154	0.206	0.747	-0.37	1.003	0.03	0.144	0.144	0.825	2015-01-02	2020-12-31
ESG_B30	Eq Weighted_r	0.121	0.233	0.52	-0.465	0.989	-0.002	-0.007	0.113	0.574	2015-01-02	2020-12-31

SP_T60	Mkt_Cap Weighted_r	0.168	0.188	0.895	-0.306	1.009	0.043	0.23	0.157	0.977	2015-01-02	2020-12-31
SP_T60	Eq Weighted_r	0.143	0.184	0.778	-0.317	1.009	0.018	0.1	0.133	0.834	2015-01-02	2020-12-31
SP_B60	Mkt_Cap Weighted_r	0.107	0.264	0.406	-0.51	1.196	-0.039	-0.149	0.082	0.466	2015-01-02	2020-12-31
SP_B60	Eq Weighted_r	0.102	0.27	0.379	-0.515	1.187	-0.043	-0.159	0.078	0.437	2015-01-02	2020-12-31
SP_T30	Mkt_Cap Weighted_r	0.18	0.192	0.938	-0.31	1.025	0.054	0.279	0.167	1.039	2015-01-02	2020-12-31
SP_T30	Eq Weighted_r	0.146	0.19	0.768	-0.336	1.022	0.019	0.102	0.133	0.825	2015-01-02	2020-12-31
SP_B30	Mkt_Cap Weighted_r	0.082	0.283	0.291	-0.541	1.248	-0.07	-0.247	0.058	0.342	2015-01-02	2020-12-31
SP_B30	Eq Weighted_r	0.081	0.291	0.279	-0.553	1.235	-0.07	-0.239	0.058	0.327	2015-01-02	2020-12-31
RESP	-	0.106	0.186	0.568	-0.363	0.942	-0.012	-0.062	0.102	0.58	2015-01-02	2020-12-31
SPY	-	0.124	0.184	0.673	-0.341	1.0	0.0	0.0	0.114	0.705	2015-01-02	2020-12-31

Exhibit 17:

Name	Weighttype	Intercept	Mkt_RF	SMB	HML	RMW	CMA	Intercept t_value	Mkt_RF t_value	SMB t_value	HML t_value	RMW t_value	CMA t_value
ESG_T60	Mkt_Cap_Weighted_return	0.073	0.976	-0.127	-0.02	0.314	0.032	0.377	20.669	-1.52	-0.26	2.369	0.23
ESG_T60	Eq_Weighted_return	-0.013	1.011	0.145	0.074	0.584	0.027	-0.074	23.821	1.93	1.056	4.901	0.216
ESG_B60	Mkt_Cap_Weighted_return	-0.423	1.051	0.061	0.034	0.053	-0.304	-1.609	16.563	0.543	0.327	0.3	-1.621
ESG_B60	Eq_Weighted_return	-0.449	1.088	0.514	0.053	0.274	-0.037	-1.531	15.388	4.107	0.461	1.379	-0.175
ESG_T30	Mkt_Cap_Weighted_return	0.127	0.927	-0.176	0.019	0.34	-0.202	0.546	16.417	-1.766	0.211	2.148	-1.21
ESG_T30	Eq_Weighted_return	0.014	0.994	0.087	0.122	0.503	-0.116	0.074	21.16	1.049	1.58	3.819	-0.831
ESG_B30	Mkt_Cap_Weighted_return	-0.329	0.995	0.003	0.014	0.04	-0.292	-1.223	15.266	0.024	0.128	0.221	-1.511
ESG_B30	Eq_Weighted_return	-0.454	1.091	0.48	0.103	0.168	-0.294	-1.289	12.769	3.183	0.736	0.702	-1.16
SP_T60	Mkt_Cap_Weighted_return	-0.116	1.002	-0.165	0.021	0.306	0.061	-0.727	25.854	-2.416	0.331	2.819	0.532
SP_T60	Eq_Weighted_return	-0.194	0.964	-0.097	0.004	0.257	0.144	-1.209	24.758	-1.412	0.06	2.356	1.247
SP_B60	Mkt_Cap_Weighted_return	-0.19	1.243	0.636	0.428	0.565	0.304	-0.614	16.585	4.807	3.481	2.687	1.372
SP_B60	Eq_Weighted_return	-0.223	1.285	0.66	0.434	0.546	0.349	-0.68	16.197	4.711	3.338	2.456	1.487
SP_T30	Mkt_Cap_Weighted_return	-0.041	1.031	-0.228	0.097	0.276	0.003	-0.235	24.039	-3.017	1.384	2.291	0.02

<b>SP_T30</b>	Eq_Weighted_return	-0.123	1.011	-0.207	0.172	0.155	0.094	-0.683	23.099	-2.682	2.395	1.266	0.726
<b>SP_B30</b>	Mkt_Cap_Weighted_return	-0.391	1.394	0.679	0.464	0.412	0.433	-0.971	14.282	3.944	2.901	1.504	1.498
<b>SP_B30</b>	Eq_Weighted_return	-0.4	1.43	0.717	0.463	0.455	0.471	-0.926	13.661	3.881	2.699	1.549	1.519

Exhibit 18:

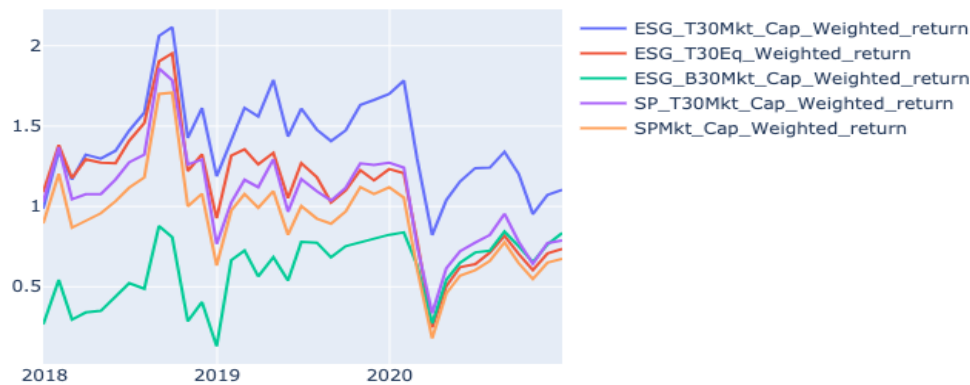
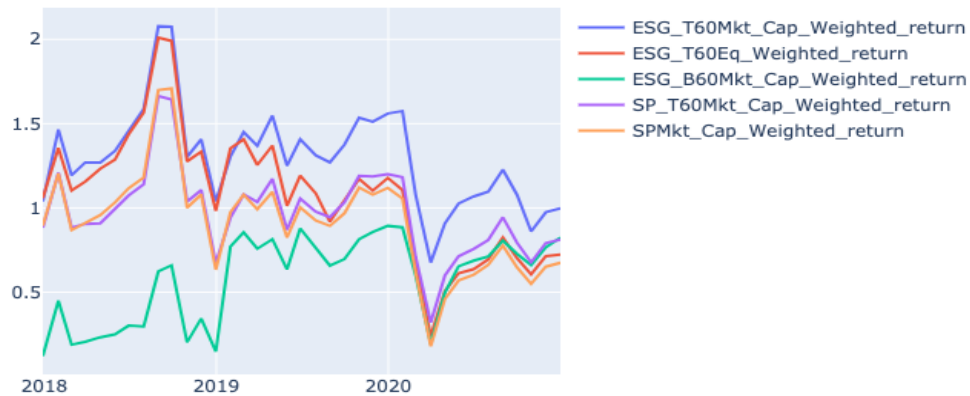


Exhibit 19:

Fund 1	Fund 2	Difference	P-value
ESG Top 60 mkt cap	ESG Bottom 60 mkt cap	0.316	0.0956
ESG Top 30 mkt cap	ESG Bottom 30 mkt cap	0.221	0.2216
ESG Top 60 mkt cap	ESG Top 60 eq cap	0.142	0.159
ESG Top 30 mkt cap	SP Top 30 mkt cap	0.03	0.4073
ESG Top 60 mkt cap	SP Top 60 mkt cap	0.089	0.1324
ESG Top 60 mkt cap	SP mkt cap	0.31	0.0734



# Exhibit 20:

Top and Bottom Sustainability Score Companies in Russell 3000					
12-31-14	12-31-15	12-31-16	12-31-17	12-31-18	12-31-19
MANPOWERGROUP INC INTEL CORP NORTHERN TRUST CORP NORTONLIFELOCK INC EMC CORP/MA CAMPBELL SOUP CO WEYERHAEUSER CO SEMPRA ENERGY BAXTER INTERNATIONAL INC INTL BUSINESS MACHINES CORP STATE STREET CORP PEPSICO INC MERCK & CO. INC. STARBUCKS CORP JOHNSON & JOHNSON CA INC BEST BUY CO INC ACCENTURE PLC-CL A OCCIDENTAL PETROLEUM CORP STARPLES INC ADOC INC ORACLE CORP UNITED PARCEL SERVICE-CL B BAKER HUGHES HOLDINGS LLC BALL CORP PLUM CREEK TIMBER CO LINDE INC/CT MEDTRONIC PLC ADOC INC MOLSON COORS BEVERAGE CO - B GOLDMAN SACHS GROUP INC PROLOGIS INC S&P GLOBAL INC GAP INC/THE LOCKHEED MARTIN CORP AGILENT TECHNOLOGIES INC APPLIED MATERIALS INC AUTODESK INC AIR PRODUCTS & CHEMICALS INC COGNIZANT TECH SOLUTIONS-A ONEOK INC ANTHEM INC JPMORGAN CHASE & CO EXELON CORP MOTOROLA SOLUTIONS INC TEXAS INSTRUMENTS INC TERADATA CORP BIOGEN INC VETNA INC BRISTOL-MYERS SQUIBB CO TARGET CORP THOMSON REUTERS CORP NORFOLK SOUTHERN CORP MICROSOFT CORP EXPEDIA GROUP INC NEW YORK COMMUNITY BANCORP POLARIS INC AES CORP FIREEYE INC LOEWS CORP JEFFERIES FINANCIAL GROUP IN CHURCH & DWIGHT CO INC FOSSIL GROUP INC UNIVERSAL HEALTH SERVICES-B DIAMOND OFFSHORE DRILLING ESSEX PROPERTY TRUST INC SUNTRUST BANKS INC WILLIAMS COS INC TRIMBLE INC WR BERKLEY CORP FIRSTENERGY CORP FRONTIER COMMUNICATIONS CORP CHICAGO BRIDGE & IRON CO NV TRIPADVISOR INC AGNC INVESTMENT CORP DISH NETWORK CORP-A LENNAR CORP-A FLIR SYSTEMS INC TWITTER INC ANNALY CAPITAL MANAGEMENT IN PRECISION CASTPARTS CORP EQUIFAX INC COSTCO WHOLESALE CORP EVEREST RE GROUP LTD HOLOGIC INC TO AMERITRADE HOLDING CORP AMETEK INC VULCAN MATERIALS CO PHILLIPS 66 RANGE RESOURCES CORP ALLEGHANY CORP LABORATORY CRP OF AMER HLDGS ANADARKO PETROLEUM CORP B/E AEROSPACE INC SBA COMMUNICATIONS CORP BERKSHIRE HATHAWAY INC-CL B FACEBOOK INC-CLASS A WALGREENS BOOTS ALLIANCE INC WESTLAKE CHEMICAL CORP QUANTA SERVICES INC CREE INC VERISK ANALYTICS INC TFCF CORP NETFLIX INC CF INDUSTRIES HOLDINGS INC OCWEN FINANCIAL CORP NEWS CORP - CLASS A TRANSOIL GROUP INC HERBALIFE NUTRITION LTD MARTIN MARIETTA MATERIALS MYLAN NV STERICYCLE INC ROPER TECHNOLOGIES INC	NORTHERN TRUST CORP CAMPBELL SOUP CO LINDE INC/CT MANPOWERGROUP INC INTEL CORP ADOC INC JOHNSON & JOHNSON WW GRAINGER INC NORTONLIFELOCK INC INTL BUSINESS MACHINES CORP MICROSOFT CORP BAXTER INTERNATIONAL INC STARBUCKS CORP STATE STREET CORP BEST BUY CO INC STARPLES INC ADOC INC VARIAN MEDICAL SYSTEMS INC ROYAL CARIBBEAN CRUISES LTD MERCK & CO. INC. PROLOGIS INC 3M CO NORDSTROM INC BIOGEN INC PEPSICO INC ORACLE CORP ACCENTURE PLC-CL A AUTODESK INC CA INC HILTON WORLDWIDE HOLDINGS IN UNITED PARCEL SERVICE-CL B BRISTOL-MYERS SQUIBB CO L BRANDS INC JUNIPER NETWORKS INC TARGET CORP CMS ENERGY CORP BECTON DICKINSON AND CO TRANTECHNOLOGIES PLC KELLOGG CO GENERAL ELECTRIC CO CBRE GROUP INC - A TERADATA CORP ANTHEM INC RESMED INC HUMANIA INC OCCIDENTAL PETROLEUM CORP AGILENT TECHNOLOGIES INC SOUTHWEST AIRLINES CO HOST HOTELS & RESORTS INC TARGEMT INC GAP INC/THE NVIDIA CORP HP INC INTUIT INC EATON CORP WW GRAINGER INC TRANTECHNOLOGIES PLC EXELON CORP EBAY INC AMERICAN TOWER CORP KIMBERLY-CLARK CORP SIRIUS XM HOLDINGS INC ANALY CAPITAL MANAGEMENT IN FLIR SYSTEMS INC FRONTIER COMMUNICATIONS CORP WILLIAMS COS INC CHENIERE ENERGY INC ALEXION PHARMACEUTICALS INC VERTEC PHARMACEUTICALS INC MALLINCKRODT PLC WORLDPAY INC-CLASS A FIREEYE INC DR HORTON INC COSTCO WHOLESALE CORP CHICAGO BRIDGE & IRON CO NV FOSSIL GROUP INC LEVEL 3 COMMUNICATIONS INC AFFILIATED MANAGERS GROUP TWITTER INC HUNT (JB) TRANSPORT SVCS INC HOLOGIC INC COOPER COS INC/THE INTUITIVE SURGICAL INC LABORATORY CRP OF AMER HLDGS EQUIFAX INC ESSEX PROPERTY TRUST INC UNITI GROUP INC ALLEGHANY CORP ARCH CAPITAL GROUP LTD NOBLE HOLDING CORP PLC WABTEC CORP EDGEWELL PERSONAL CARE CO ALKERMES PLC PALO ALTO NETWORKS INC NETFLIX INC WYNN RESORTS LTD VERISK ANALYTICS INC SBA COMMUNICATIONS CORP OCWEN FINANCIAL CORP LEAR CORP PHILLIPS 66 DISH NETWORK CORP-A WESTLAKE CHEMICAL CORP VEREIT INC FIDELITY NATIONAL FINANCIAL CREE INC SYBERGY FINANCIAL NEWS CORP - CLASS A UNIVERSAL HEALTH SERVICES-B CF INDUSTRIES HOLDINGS INC RITE AID CORP AMETEK INC STERICYCLE INC HERBALIFE NUTRITION LTD ENDO INTERNATIONAL PLC FORTUNE BRANDS HOME & SECURI ACUTY BRANDS INC MARTIN MARIETTA MATERIALS HIL AEROSPACE INC MONSTER BEVERAGE CORP	INTEL CORP CAMPBELL SOUP CO NORTONLIFELOCK INC JOHNSON & JOHNSON MANPOWERGROUP INC ACCENTURE PLC-CL A BAXTER INTERNATIONAL INC INTL BUSINESS MACHINES CORP BIOGEN INC JOHNSON CONTROLS INTERNATIONAL ADOC INC PROLOGIS INC MICROSOFT CORP STARBUCKS CORP NORDSTROM INC BRISTOL-MYERS SQUIBB CO LINDE INC/CT STATE STREET CORP CA INC BEST BUY CO INC ROYAL CARIBBEAN CRUISES LTD MACY'S INC ROCKWELL COLLINS INC STATE STREET CORP CA INC BEST BUY CO INC ROYAL CARIBBEAN CRUISES LTD MACY'S INC BIOGEN INC HILTON WORLDWIDE HOLDINGS IN CMS ENERGY CORP DELL TECHNOLOGIES INC-CL V GAP INC/THE ORACLE CORP ROCKWELL COLLINS INC MOLSON COORS BEVERAGE CO - B TERADATA CORP BALL CORP MERCK & CO. INC. MEDTRONIC PLC S&P GLOBAL INC HP INC XYLEM INC BANK OF AMERICA CORP KELLOGG CO COGNIZANT TECH SOLUTIONS-A AGILENT TECHNOLOGIES INC KOHLS CORP HEWLETT PACKARD ENTERPRISE AUTODESK INC SOUTHWEST AIRLINES CO BECTON DICKINSON AND CO LIL LILLY & CO TARGEMT INC MONDELEZ INTERNATIONAL INC-A GOLDMAN SACHS GROUP INC TRAVEL + LEISURE CO EBAY INC TEXAS INSTRUMENTS INC WW GRAINGER INC CBRE GROUP INC - A GENERAL MILLS INC HOME DEPOT INC CUMMINS INC ABVIE INC BOOKING HOLDINGS INC ROBERT HALF INTL INC SESI HOLDINGS INC OGE ENERGY CORP ALLEGHANY CORP CONCHO RESOURCES INC CDW CORP/DE GORE LIFE INC LABORATORY CRP OF AMER HLDGS DR HORTON INC SMITH (A.O.) CORP HOLOGIC INC BRIMOR PROPERTY GROUP INC ALLY FINANCIAL INC MARKEL CORP WABTEC CORP HUNT (JB) TRANSPORT SVCS INC UGI CORP KRAFT HEINZ CO/THE TFCF CORP - B EQUIFAX INC PALO ALTO NETWORKS INC NOBLE HOLDING CORP PLC BERKSHIRE HATHAWAY INC-CL B LOEWS CORP EDGEWELL PERSONAL CARE CO NETFLIX INC MALLINCKRODT PLC CHICAGO BRIDGE & IRON CO NV EXTRA SPACE STORAGE INC AFFILIATED MANAGERS GROUP ARCH CAPITAL GROUP LTD L3 TECHNOLOGIES INC MEDNAX INC INTUITIVE SURGICAL INC QUARTE RETAIL INC-SERIES A STERICYCLE INC OCWEN FINANCIAL CORP FIDELITY NATIONAL FINANCIAL LEARNER CORP RITE AID CORP WESTLAKE CHEMICAL CORP CREE INC ENDO INTERNATIONAL PLC AMERCO NEWS CORP - CLASS A UNIVERSAL HEALTH SERVICES-B CF INDUSTRIES HOLDINGS INC AMETEK INC DOMINO'S PIZZA INC HERBALIFE NUTRITION LTD MARTIN MARIETTA MATERIALS DISH NETWORK CORP-A MONSTER BEVERAGE CORP	INTEL CORP INTL BUSINESS MACHINES CORP ACCENTURE PLC-CL A BAXTER INTERNATIONAL INC BIOGEN INC MICROSOFT CORP CAMPBELL SOUP CO JOHNSON CONTROLS INTERNATIONAL NORTONLIFELOCK INC BEST BUY CO INC MANPOWERGROUP INC HEWLETT PACKARD ENTERPRISE ROYAL CARIBBEAN CRUISES LTD PEPSICO INC STATE STREET CORP MACY'S INC JOHNSON & JOHNSON ORACLE CORP STARBUCKS CORP GAP INC/THE ABBOTT LABORATORIES ONEOK INC PROLOGIS INC AEROSPACE INC EDWARDS LIFESCIENCES CORP NORDSTROM INC BRISTOL-MYERS SQUIBB CO NEWMONT CORP SALESFORCE.COM INC HOST HOTELS & RESORTS INC ABVIE INC BECTON DICKINSON AND CO FEDEX CORP TERADATA CORP KOHLS CORP ADOC INC S&P GLOBAL INC WW GRAINGER INC KIMBERLY-CLARK CORP TARGET CORP MERCK & CO. INC. RESMED INC GOLDMAN SACHS GROUP INC AGILENT TECHNOLOGIES INC EBAY INC HILTON WORLDWIDE HOLDINGS IN TIX COMPANIES INC CMS ENERGY CORP TARGEMT INC MONDELEZ INTERNATIONAL INC-A PRIZER INC ALPHABET INC-CL C NVIDIA CORP HOME DEPOT INC BANK OF NEW YORK MELLON CORP VISA INC-CLASS A SHARES APTIV PLC JONES LANG LASALLE INC MASTERCARD INC - A AVALONBAY COMMUNITIES INC ALKERMES PLC ROBERT HALF INTL INC ALNYLAM PHARMACEUTICALS INC MIDDLEBURY CORP CENTENE CORP BERKSHIRE HATHAWAY INC-CL B AMERCO HUNTINGTON INGALLS INDUSTRIE COTY INC-CL A NETFLIX INC LIBERTY MEDIA COR-SIRIUSXM C RITE AID CORP SBA COMMUNICATIONS CORP CAPRI HOLDINGS LTD DISH NETWORK CORP-A CITIZENS FINANCIAL GROUP FIDELITY NATIONAL FINANCIAL ROPER TECHNOLOGIES INC FOSSIL GROUP INC VIACOMCBS INC - CLASS B MARTIN MARIETTA MATERIALS WILLIAMS COS INC NATIONAL RETAIL PROPERTIES CIMAREX ENERGY CO IONIS PHARMACEUTICALS INC VULCAN MATERIALS CO M & T BANK CORP PAYCHEX INC VEREIT INC MARKEL CORP CF INDUSTRIES HOLDINGS INC MALLINCKRODT PLC NOBLE HOLDING CORP PLC EXTRA SPACE STORAGE INC DEXCOM INC ATMOS ENERGY CORP MEDNAX INC ACUTY BRANDS INC AFFILIATED MANAGERS GROUP L3 TECHNOLOGIES INC OCWEN FINANCIAL CORP SIRIUS XM HOLDINGS INC LOEWS CORP UGI CORP WESTLAKE CHEMICAL CORP INTUITIVE SURGICAL INC STERICYCLE INC CREE INC ENDO INTERNATIONAL PLC TRUIST FINANCIAL CORP CDW CORP/DE UNIVERSAL HEALTH SERVICES-B HERBALIFE NUTRITION LTD MARTIN MARIETTA MATERIALS SMITH (A.O.) CORP DOMINO'S PIZZA INC EQUIFAX INC DISH NETWORK CORP-A MONSTER BEVERAGE CORP	INTEL CORP HP INC CAMPBELL SOUP CO ACCENTURE PLC-CL A INTL BUSINESS MACHINES CORP WW GRAINGER INC HOME DEPOT INC ROYAL CARIBBEAN CRUISES LTD NEWMONT CORP MICROSOFT CORP JOHNSON & JOHNSON XYLEM INC HESS CORP KELLOGG CO EDWARDS LIFESCIENCES CORP GAP INC/THE STATE STREET CORP EDWARDS LIFESCIENCES CORP INTL FLAVORS & FRAGRANCES PROLOGIS INC STATE STREET CORP EDWARDS LIFESCIENCES CORP INTL FLAVORS & FRAGRANCES GAP INC/THE GENERAL MILLS INC S&P GLOBAL INC ORACLE CORP MERCK & CO. INC. HEWLETT PACKARD ENTERPRISE STARBUCKS CORP ADOC INC VOYA FINANCIAL INC BAXTER INTERNATIONAL INC 3M CO HOST HOTELS & RESORTS INC PRUDENTIAL FINANCIAL INC HOST HOTELS & RESORTS INC BEST BUY CO INC TERADATA CORP WORKDAY INC-CLASS A ANALOG DEVICES INC KIMBERLY-CLARK CORP MEDTRONIC PLC BIOGEN INC INTUIT INC JONES LANG LASALLE INC GOLDMAN SACHS GROUP INC NVIDIA CORP MACY'S INC KROGER CO VISA INC-CLASS A SHARES NORDSTROM INC MORGAN STANLEY NVIDIA CORP LEAR CORP AGILENT TECHNOLOGIES INC GENERAL ELECTRIC CO MOTOROLA SOLUTIONS INC TEXAS INSTRUMENTS INC RESMED INC KOHLS CORP MANPOWERGROUP INC BRISTOL-MYERS SQUIBB CO TRANTECHNOLOGIES PLC PALO ALTO NETWORKS INC CENTENE CORP CENTENE CORP NATIONAL RETAIL PROPERTIES MARVELL TECHNOLOGY GROUP LTD CDW CORP/DE FORTUNE BRANDS HOME & SECURI COTY INC-CL A HELMERICH & PAYNE RITE AID CORP ZILLOW GROUP INC - A PARSLEY ENERGY INC-CLASS A ZAYO GROUP HOLDINGS INC CAPRI HOLDINGS LTD DISH NETWORK CORP-A OLD DOMINION FREIGHT LINE UNITI GROUP INC CIT GROUP INC FOSSIL GROUP INC VEEVA SYSTEMS INC-CLASS A MARKEL CORP INVITATION HOMES INC HUNTINGTON INGALLS INDUSTRIE SIRIUS XM HOLDINGS INC IONIS PHARMACEUTICALS INC COGNEX CORP INTUITIVE SURGICAL INC VULCAN MATERIALS CO EXTRA SPACE STORAGE INC NETFLIX INC CIMAREX ENERGY CO NOBLE HOLDING CORP PLC ARCH CAPITAL GROUP LTD UNIVERSAL HEALTH SERVICES-B DEXCOM INC VEREIT INC ATMOS ENERGY CORP WESTLAKE CHEMICAL CORP XPO LOGISTICS INC SBA COMMUNICATIONS CORP MEDNAX INC OCWEN FINANCIAL CORP DOMINO'S PIZZA INC CITIZENS FINANCIAL GROUP QUARTE RETAIL INC-SERIES A SS&C TECHNOLOGIES HOLDINGS CHEMOURS CO/THE CREE INC ENDO INTERNATIONAL PLC LOEWS CORP UGI CORP LIBERTY MEDIA COR-SIRIUSXM C MONSTER BEVERAGE CORP HERBALIFE NUTRITION LTD MARTIN MARIETTA MATERIALS KNIGHT-SWIFT TRANSPORTATION SMITH (A.O.) CORP EQUIFAX INC	HP INC WW GRAINGER INC INTL FLAVORS & FRAGRANCES MICROSOFT CORP INTEL CORP ACCENTURE PLC-CL A STATE STREET CORP LAS VEGAS SANDS CORP INTL BUSINESS MACHINES CORP HILTON WORLDWIDE HOLDINGS IN XYLEM INC HESS CORP KELLOGG CO EDWARDS LIFESCIENCES CORP GAP INC/THE GOLDMAN SACHS GROUP INC SALESFORCE.COM INC PEPSICO INC STARBUCKS CORP NORTONLIFELOCK INC MORGAN STANLEY EVERSOURCE ENERGY VERIZON COMMUNICATIONS INC METTLER TOLEDO INTERNATIONAL XEROX HOLDINGS INC ADOC INC GLOBAL INC HOME DEPOT INC NVIDIA CORP PROLOGIS INC VOYA FINANCIAL INC CIGNA CORP NORTHERN TRUST CORP JOHNSON & JOHNSON ROYAL CARIBBEAN CRUISES LTD CMS ENERGY CORP CONOCOPHILLIPS ADOC INC CAMPBELL SOUP CO NEWMONT CORP ORACLE CORP DELL TECHNOLOGIES -C GENERAL MILLS INC MERCK & CO. INC. TERADATA CORP WORKDAY INC-CLASS A BRISTOL-MYERS SQUIBB CO TEXAS INSTRUMENTS INC BANK OF NEW YORK MELLON CORP LEAR CORP ILLINOIS TOOL WORKS VISA INC-CLASS A SHARES BALL CORP MASTERCARD INC - A BEST BUY CO INC ADVANCED MEDICAL SYSTEMS INC MEDTRONIC PLC WASTE MANAGEMENT INC KOHLS CORP UNITED PARCEL SERVICE-CL B 3M CO PALO ALTO NETWORKS INC CENTENE CORP STERICYCLE INC HERZ HOLDINGS INC HERTZ GLOBAL HOLDINGS INC EVEREST RE GROUP LTD IONIS PHARMACEUTICALS INC UGI CORP INVITATION HOMES INC COSTAR GROUP INC LIBERTY MEDIA COR-SIRIUSXM C ATHENE HOLDING LTD-CLASS A SAREPTA THERAPEUTICS INC CHEMOURS CO/THE AGNC INVESTMENT CORP EVERGY INC WILLIAMS COS INC NEKTAR THERAPEUTICS TRANSNIGM GROUP INC LAMB WESTON HOLDINGS INC RITE AID CORP EQUITY BRANDS INC EQUIFAX INC OLD DOMINION FREIGHT LINE CITIZENS FINANCIAL GROUP UNITI GROUP INC ARCH CAPITAL GROUP LTD FOSSIL GROUP INC LEGGETT & PLATT INC AMERCO LOEWS CORP ABIOMED INC NETFLIX INC WESTLAKE CHEMICAL CORP SS&C TECHNOLOGIES HOLDINGS MARTIN MARIETTA MATERIALS SMITH (A.O.) CORP HELMERICH & PAYNE CIT GROUP INC ATMOS ENERGY CORP HUNT (JB) TRANSPORT SVCS INC OCWEN FINANCIAL CORP SIRIUS XM HOLDINGS INC MEDNAX INC MARKEL CORP HARLEY-DAVIDSON INC OCWEN FINANCIAL CORP DEXCOM INC CROWN HOLDINGS INC AMETEK INC KNIGHT-SWIFT TRANSPORTATION CREE INC ENDO INTERNATIONAL PLC ZILLOW GROUP INC - A UBER TECHNOLOGIES INC QUARTE RETAIL INC-SERIES A HERBALIFE NUTRITION LTD LENNAR CORP-A UNIVERSAL HEALTH SERVICES-B VULCAN MATERIALS CO

Top ESG Score Companies (Ranked by highest to lowest)

Bottom ESG Score Companies (Ranked by highest to lowest)



12.31.14	12.31.15	12.31.16	12.31.17	12.31.18	12.31.19
APPLE INC	APPLE INC	APPLE INC	MICROSOFT CORP	APPLE INC	APPLE INC
EXXON MOBIL CORP	ALPHABET INC-CL C	ALPHABET INC-CL C	APPLE INC	MICROSOFT CORP	EXXON MOBIL CORP
MICROSOFT CORP	MICROSOFT CORP	MICROSOFT CORP	ALPHABET INC-CL C	ALPHABET INC-CL C	MICROSOFT CORP
BERKSHIRE HATHAWAY INC-CL B	BERKSHIRE HATHAWAY INC-CL B	BERKSHIRE HATHAWAY INC-CL B	AMAZON.COM INC	AMAZON.COM INC	AMAZON.COM INC
ALPHABET INC-CL C	EXXON MOBIL CORP	EXXON MOBIL CORP	FACEBOOK INC-CLASS A	BERKSHIRE HATHAWAY INC-CL B	FACEBOOK INC-CLASS A
JOHNSON & JOHNSON	AMAZON.COM INC	AMAZON.COM INC	BERKSHIRE HATHAWAY INC-CL B	JOHNSON & JOHNSON	BERKSHIRE HATHAWAY INC-CL B
WELLS FARGO & CO	FACEBOOK INC-CLASS A	FACEBOOK INC-CLASS A	JOHNSON & JOHNSON	JPMORGAN CHASE & CO	VISA INC-CLASS SHARES
WALMART INC	GENERAL ELECTRIC CO	JOHNSON & JOHNSON	JPMORGAN CHASE & CO	EXXON MOBIL CORP	VISA INC-CLASS A SHARES
GENERAL ELECTRIC CO	JOHNSON & JOHNSON	WELLS FARGO & CO	GENERAL ELECTRIC CO	BANK OF AMERICA CORP	EXXON MOBIL CORP
PROCTER & GAMBLE CO/THE	JPMORGAN CHASE & CO	PROCTER & GAMBLE CO/THE	AT&T INC	WELLS FARGO & CO	WALMART INC
FACEBOOK INC-CLASS A	AT&T INC	AT&T INC	AT&T INC	WALMART INC	PFIZER INC
CHEVRON CORP	CHEVRON CORP	CHEVRON CORP	AT&T INC	WALMART INC	PFIZER INC
ORACLE CORP	WALMART INC	WALMART INC	AT&T INC	WALMART INC	PFIZER INC
PFIZER INC	VERIZON COMMUNICATIONS INC	VERIZON COMMUNICATIONS INC	AT&T INC	WALMART INC	PFIZER INC
VERIZON COMMUNICATIONS INC	BANK OF AMERICA CORP	BANK OF AMERICA CORP	AT&T INC	WALMART INC	PFIZER INC
BANK OF AMERICA CORP	Coca-Cola CO/THE	Coca-Cola CO/THE	AT&T INC	WALMART INC	PFIZER INC
Coca-Cola CO/THE	VISA INC-CLASS A SHARES	VISA INC-CLASS A SHARES	AT&T INC	WALMART INC	PFIZER INC
VISA INC-CLASS A SHARES	WALT DISNEY CO/THE	WALT DISNEY CO/THE	AT&T INC	WALMART INC	PFIZER INC
INTEL CORP	AT&T INC	AT&T INC	AT&T INC	WALMART INC	PFIZER INC
AT&T INC	CITIGROUP INC	CITIGROUP INC	AT&T INC	WALMART INC	PFIZER INC
CITIGROUP INC	MERCK & CO. INC.	MERCK & CO. INC.	AT&T INC	WALMART INC	PFIZER INC
MERCK & CO. INC.	WALT DISNEY CO/THE	WALT DISNEY CO/THE	AT&T INC	WALMART INC	PFIZER INC
WALT DISNEY CO/THE	INTL BUSINESS MACHINES CORP	INTL BUSINESS MACHINES CORP	AT&T INC	WALMART INC	PFIZER INC
INTL BUSINESS MACHINES CORP	COMCAST CORP-CLASS A	COMCAST CORP-CLASS A	AT&T INC	WALMART INC	PFIZER INC
COMCAST CORP-CLASS A	CISCO SYSTEMS INC	CISCO SYSTEMS INC	AT&T INC	WALMART INC	PFIZER INC
CISCO SYSTEMS INC	PEPSICO INC	PEPSICO INC	AT&T INC	WALMART INC	PFIZER INC
PEPSICO INC	GILEAD SCIENCES INC	GILEAD SCIENCES INC	AT&T INC	WALMART INC	PFIZER INC
GILEAD SCIENCES INC	CISCO SYSTEMS INC	CISCO SYSTEMS INC	AT&T INC	WALMART INC	PFIZER INC
CISCO SYSTEMS INC	COMCAST CORP-CLASS A	COMCAST CORP-CLASS A	AT&T INC	WALMART INC	PFIZER INC
COMCAST CORP-CLASS A	PHILIP MORRIS INTERNATIONAL	PHILIP MORRIS INTERNATIONAL	AT&T INC	WALMART INC	PFIZER INC
PHILIP MORRIS INTERNATIONAL	INTL BUSINESS MACHINES CORP	INTL BUSINESS MACHINES CORP	AT&T INC	WALMART INC	PFIZER INC
INTL BUSINESS MACHINES CORP	ALLERGAN PLC	ALLERGAN PLC	AT&T INC	WALMART INC	PFIZER INC
ALLERGAN PLC	AMGEN INC	AMGEN INC	AT&T INC	WALMART INC	PFIZER INC
AMGEN INC	CYSTOL-MYERS SQUIBB CO	CYSTOL-MYERS SQUIBB CO	AT&T INC	WALMART INC	PFIZER INC
CYSTOL-MYERS SQUIBB CO	ALTRIA GROUP INC	ALTRIA GROUP INC	AT&T INC	WALMART INC	PFIZER INC
ALTRIA GROUP INC	UNITEDHEALTH GROUP INC	UNITEDHEALTH GROUP INC	AT&T INC	WALMART INC	PFIZER INC
UNITEDHEALTH GROUP INC	MASTERCARD INC - A	MASTERCARD INC - A	AT&T INC	WALMART INC	PFIZER INC
MASTERCARD INC - A	MCDONALD'S CORP	MCDONALD'S CORP	AT&T INC	WALMART INC	PFIZER INC
MCDONALD'S CORP	CVS HEALTH CORP	CVS HEALTH CORP	AT&T INC	WALMART INC	PFIZER INC
CVS HEALTH CORP	UNITED PARCEL SERVICE-CL B	UNITED PARCEL SERVICE-CL B	AT&T INC	WALMART INC	PFIZER INC
UNITED PARCEL SERVICE-CL B	NIKE INC -CL B	NIKE INC -CL B	AT&T INC	WALMART INC	PFIZER INC
NIKE INC -CL B	BOEING CO/THE	BOEING CO/THE	AT&T INC	WALMART INC	PFIZER INC
BOEING CO/THE	ABBVIE INC	ABBVIE INC	AT&T INC	WALMART INC	PFIZER INC
ABBVIE INC	ELI LILLY & CO	ELI LILLY & CO	AT&T INC	WALMART INC	PFIZER INC
ELI LILLY & CO	CELGENE CORP	CELGENE CORP	AT&T INC	WALMART INC	PFIZER INC
CELGENE CORP	WALGREENS BOOTS ALLIANCE INC	WALGREENS BOOTS ALLIANCE INC	AT&T INC	WALMART INC	PFIZER INC
WALGREENS BOOTS ALLIANCE INC	3M CO	3M CO	AT&T INC	WALMART INC	PFIZER INC
3M CO	STARBUCKS CORP	STARBUCKS CORP	AT&T INC	WALMART INC	PFIZER INC
STARBUCKS CORP	KRAFT HEINZ CO/THE	KRAFT HEINZ CO/THE	AT&T INC	WALMART INC	PFIZER INC
KRAFT HEINZ CO/THE	SCHLUMBERGER LTD	SCHLUMBERGER LTD	AT&T INC	WALMART INC	PFIZER INC
SCHLUMBERGER LTD	UNITED PARCEL SERVICE-CL B	UNITED PARCEL SERVICE-CL B	AT&T INC	WALMART INC	PFIZER INC
UNITED PARCEL SERVICE-CL B	RAYTHEON TECHNOLOGIES CORP	RAYTHEON TECHNOLOGIES CORP	AT&T INC	WALMART INC	PFIZER INC
RAYTHEON TECHNOLOGIES CORP	GOLDMAN SACHS GROUP INC	GOLDMAN SACHS GROUP INC	AT&T INC	WALMART INC	PFIZER INC
GOLDMAN SACHS GROUP INC	CONOCOPHILIPS	CONOCOPHILIPS	AT&T INC	WALMART INC	PFIZER INC
CONOCOPHILIPS	NIKE INC -CL B	NIKE INC -CL B	AT&T INC	WALMART INC	PFIZER INC
NIKE INC -CL B	TCF CORP	TCF CORP	AT&T INC	WALMART INC	PFIZER INC
TCF CORP	US BANCORP	US BANCORP	AT&T INC	WALMART INC	PFIZER INC
US BANCORP	BIOGEN INC	BIOGEN INC	AT&T INC	WALMART INC	

## VIII. References

Accounting Today. 2020. "SASB teams with GRI on sustainability reporting." Accessed 15 March 2021.

<https://www.accountingtoday.com/news/sasb-teams-with-gri-on-sustainability-reporting>

Bauer, Rob, Kees Koedijk, Rog r Otten. 2005. "International evidence on ethical mutual fund performance and investment style." *Journal of Banking & Finance*. Accessed 10 March 2021.

<https://www.sciencedirect.com/science/article/pii/S0378426604001372?via%3Dihub>

CFA Institute. 2015. "ENVIRONMENTAL, SOCIAL, AND GOVERNANCE ISSUES IN INVESTING, A Guide for Investment Professionals." Accessed 20 Feb 2021.

<https://www.cfainstitute.org/-/media/documents/article/position-paper/esg-issues-in-investing-a-guide-for-investment-professionals.ashx>

CFTC. 2020. "CFTC's Climate-Related Market Risk Subcommittee Releases Report." Accessed 01 March 2021.

<https://www.cftc.gov/PressRoom/PressReleases/8234-20>

Drempetic, Samuel, Christian Klein, Bernhard Zwergel. 2019. "The Influence of Firm Size on the ESG Score: Corporate Sustainability Ratings Under Review." *Journal of Business Ethics*.

<https://link.springer.com/article/10.1007/s10551-019-04164-1>

FRED. n.d. "3-Month Treasury Bill: Secondary Market Rate." Accessed 15 April 2021.

<https://fred.stlouisfed.org/series/TB3MS>

French, Kenneth R. n.d. "Description of Fama/French 5 Factors (2x3)." Accessed 01 April 2021.

[https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data\\_Library/f-f\\_5\\_factors\\_2x3.html](https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/f-f_5_factors_2x3.html)

Fung, Willian, David A. Hsieh. 1997. "Empirical characteristics of dynamic trading strategies: The case of hedge funds." *Review of Financial Studies*, 10(2), 275–302. Accessed 01 April 2021.

<https://faculty.fuqua.duke.edu/~dah7/rfs1997.pdf>

Hamilton, Sally, Hoje Jo, Meir Statman. 1993. “Doing well while doing good? The investment performance of socially responsible mutual funds.” *Financial Analysts Journal*. Accessed 20 March 2021.

<https://www.jstor.org/stable/4479700?seq=1>

Harvard Law School Forum on Corporate Governance. 2020. “The Rise of Standardized ESG Disclosure Frameworks in the United States.” Accessed 01 April 2021.

<https://corpgov.law.harvard.edu/2020/06/22/the-rise-of-standardized-esg-disclosure-frameworks-in-the-united-states/#4>

Investopedia. n.d. “Definitions of some metrics given by Investopedia.” Accessed 01 March 2021.

<https://www.investopedia.com/>

Ledoit, Oliver, Michael Wolf. 2008. “Robust performance hypothesis testing with the Sharpe ratio.” *Journal of Empirical Finance*. Accessed 01 April 2021.

<https://www.sciencedirect.com/science/article/abs/pii/S0927539808000182>

Liang, Bing. 2000. “Hedge Funds: The Living and the Dead.” *The Journal of Financial and Quantitative Analysis*. Accessed 01 April 2021.

<https://www.jstor.org/stable/2676206?origin=crossref&seq=1>

MSCI. n.d. “Who will regulate ESG?” Accessed 20 Feb 2021.

<https://www.msci.com/who-will-regulate-esg>

PRI. 2021. “Annual Report.” Accessed 20 Feb 2021.

<https://www.unpri.org/annual-report-2020/how-we-work/building-our-effectiveness/enhance-our-global-footprint>

PRI. n.d. “What is responsible investment?” Accessed 20 Feb 2021.



<https://www.unpri.org/an-introduction-to-responsible-investment/what-is-responsible-investment/4780.article>

PRI. 2021. "Signatory directory." Accessed 20 Feb 2021.

<https://www.unpri.org/signatories/signatory-resources/signatory-directory>

Rennebooga, Luc, Jenke Ter Horsta, Chendi Zhang. 2008. "Socially responsible investments: Institutional aspects, performance, and investor behavior." *Journal of Banking & Finance*. Accessed 10 March 2021.

[https://www.sciencedirect.com/science/article/pii/S0378426607004220?casa\\_token=OUTUf98o\\_vz4AAAAA:cS96hyeIujtXSCE0dLnbtA43ch2CdzTv6\\_gEZmn21Lkb89n0n5awE5a26yo24Fq16-b7Z7laV60#bib45](https://www.sciencedirect.com/science/article/pii/S0378426607004220?casa_token=OUTUf98o_vz4AAAAA:cS96hyeIujtXSCE0dLnbtA43ch2CdzTv6_gEZmn21Lkb89n0n5awE5a26yo24Fq16-b7Z7laV60#bib45)

Revelli, Christophe, Jean-Laurent Viviani. 2014. "Financial performance of socially responsible investing (SRI): what have we learned? A meta-analysis." Accessed 01 April 2021

<https://onlinelibrary.wiley.com/doi/abs/10.1111/beer.12076>

Riedl, Arno, Paul Smeets. 2017. "Why Do Investors Hold Socially Responsible Mutual Funds?" Accessed 20 March 2021.

<https://onlinelibrary.wiley.com/doi/abs/10.1111/jofi.12547>

SEC. 2021. "SEC Announces Enforcement Task Force Focused on Climate and ESG Issues." Accessed 01 April 2021.

<https://www.sec.gov/news/press-release/2021-42>

Shoreline. 2020. "Solving the data conundrum for ESG Investing." Accessed 15 March 2021.

<https://shorelineawc.com/solving-the-data-conundrum-for-esg-investing/>

World Finance. n.d. "Sustainable investment boom sees huge surge in ESG funds." Accessed 15 March 2021.

<https://www.worldfinance.com/wealth-management/esg-funds-and-the-sustainable-investment-boom>