

Resource Efficiency: Examining the return pattern of the Osmosis MoRE World Smart Beta Fund

The purpose of this note is to examine the return pattern of the MoRE World Smart Beta Fund. We seek to demonstrate, through in-depth analysis of independent variables, that a significant portion of the Fund’s idiosyncratic return comes from the Osmosis Resource Efficiency Factor.

Executive Summary

The Osmosis MoRE World Smart Beta Fund¹ seeks to generate returns based on Osmosis’ Model of Resource Efficiency (MoRE). Resource efficiency (RE) is measured at the company level, using Osmosis’ proprietary environmental database, and focuses on the quantity of water, carbon emissions, and waste created to produce each unit of revenue.

Stocks held within the Osmosis MoRE World Smart Beta Fund are weighted depending on their measure of resource efficiency as calculated using Osmosis’ proprietary ‘RE’ factor. For clarity, the portfolio maintains overweight positions in those companies which most efficiently use limited resources and underweight positions in resource intensive companies.

The investment literature is awash with studies asking whether ‘environmentally friendly’ (or ‘green’) portfolios can be operated without incurring a financial penalty. The Fund has consistently demonstrated positive returns relative to the MSCI World benchmark since its launch in June 2017 (Figure 1); all this while significantly reducing the environmental footprint of the investments held.

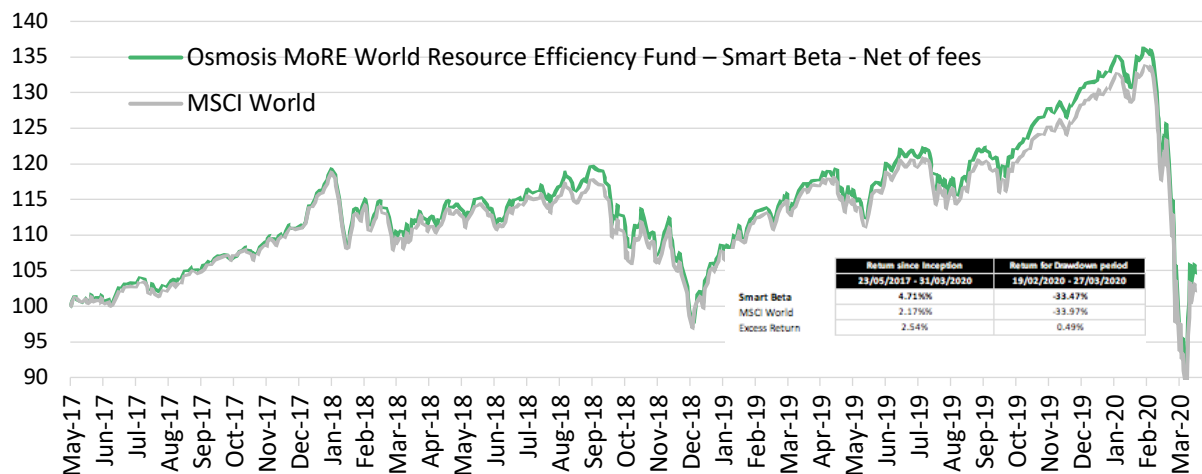


Figure 1
Source: Osmosis IM, Bloomberg, Northern Trust, MSCI.

MSCI World is NDDUWI Index, Net Total Return (USD).

Osmosis MoRE World Resource Efficiency Fund – Smart Beta (OMWSBAU ID) strategy inception date is May 2017. Returns represent the actual returns for the Smart Beta fund, Class A. Such returns are net of fees, costs and dividend withholding tax. Different fees apply to each share class and a client’s returns will be reduced by the advisory fee and other expenses incurred in the management of its account. Please see the attached performance calculation disclosure language. Past performance is not an indication of future performance.

¹ The OSMOSIS MoRE World Smart Beta Fund is not available for U.S. Investors. This report is for informational purposes only. Separate accounts are available for U.S. investors using the same model and investment objective of the Fund.

This note analyses the Fund's outperformance and demonstrates that it is uncorrelated to other common return drivers. Our findings suggest that there are no hidden biases that explain the consistent outperformance and reinforce our confidence that the positive performance differential of Osmosis' Smart Beta Fund is the reward for investing in resource efficient companies. The results support our investment thesis that those companies which consume least of the Earth's scarce resources and produce least waste are, all else equal, better managed companies, capable of generating enhanced shareholder value.

Factor isolation

The construction of the Smart Beta Fund aims to isolate the power of the Osmosis RE factor by replicating the standard factor exposures of the MSCI World Index (e.g. value, momentum, volatility, dividend yield etc.) and by maintaining neutral sector and regional weightings. Like the MSCI World Index, the Fund is a developed markets strategy.

Despite the investment team's best attempts to isolate the RE factor as described, we recognise that other tilts could potentially be responsible for the steady outperformance shown in Figure 1. The remainder of this note summarises work undertaken to find an alternative explanation for the Smart Beta active return relative to the MSCI World Index. To do this we not only examine the correlation of the Fund's active returns with those of emerging market indices, common factor indices, and sustainable investment indices, and other asset classes such as yields, currencies, bonds, and commodities (see Appendix). We go further and conduct a multivariate regression analysis.

In our analysis we focus on the period of live returns. We use daily data over a period of nearly three years from 24 May 2017, when the Fund went live, to 31 March 2020.

For clarification, in this article we do not perform a traditional equity return attribution as alternative asset classes, such as commodities or currencies, cannot be included in such an analysis. The results of a full return attribution analysis, however, are available on request.

Univariate correlations

When we examine the return stream of the Osmosis MoRE World Smart Beta Fund, and once we allow for the return element associated with the benchmark, there is an 'active' unexplained element that can normally be largely attributed to industry, sector, currency, and common factor exposures.² We begin by measuring the correlation of this active performance against the extensive range of market variables listed in the Appendix.

In the correlation matrix below, we see that the Smart Beta active return (first column) is uncorrelated with Treasury yields, currencies, and commodity indices. The absence of emerging market exposure is indicated by the missing correlations to the Latin America, Europe, Middle East & Africa, and Asia indices. In addition, the Smart Beta Fund is designed to possess similar style characteristics to the MSCI World Index. This is confirmed by the data which shows indeed that the Smart Beta active return is uncorrelated with the active returns of most common factor indices; our factor tilt elimination works. While all correlations are far below any material correlation threshold, the active returns on the MSCI World Mid Cap Index show a slightly negative correlation of -0.24 and those on the MSCI World Quality Index show a slightly positive correlation of 0.12.

² We perform the same analysis using the 'specific' return element, which is the part left 'unexplained' after allowing for the return associated with the benchmark, industry, sector, currency, and common factor exposures. The results are identical. We use the active return as it is, in a sense, the more conservative approach.

Given the large number of variables included in our analysis, some of the correlations might be seen as random and coincidental, while others, for instance quality, are inherent characteristics of resource efficient companies. While outside of the scope of this note, separate analyses by Osmosis’ research team demonstrates that resource efficient companies share desirable financial characteristics.

Regarding sustainability indices, the Osmosis MoRE World Smart Beta Fund and the MSCI World Low Carbon Leaders Index show some, still minor, commonality (0.13). We are not surprised by this as, logically, some correlation should be expected between resource efficiency, which is a combination of carbon, water, and waste, and a low-carbon index. However, given that Osmosis’ MoRE takes a broader approach and includes water and waste in the measurement of corporate environmental footprints, the correlation remains low. There is a slightly negative correlation of -0.10 to the MSCI Global Sustainable Water Index, which selects companies based on the revenue derived from water-related activities. Osmosis’ inclusion of corporate water usage in its resource efficiency metric is an altogether different approach. Deriving revenue from water treatment technologies, for example, does not mean that the firm is water efficient during the production of that technology (which is what Osmosis measures); hence why a negative correlation is possible.

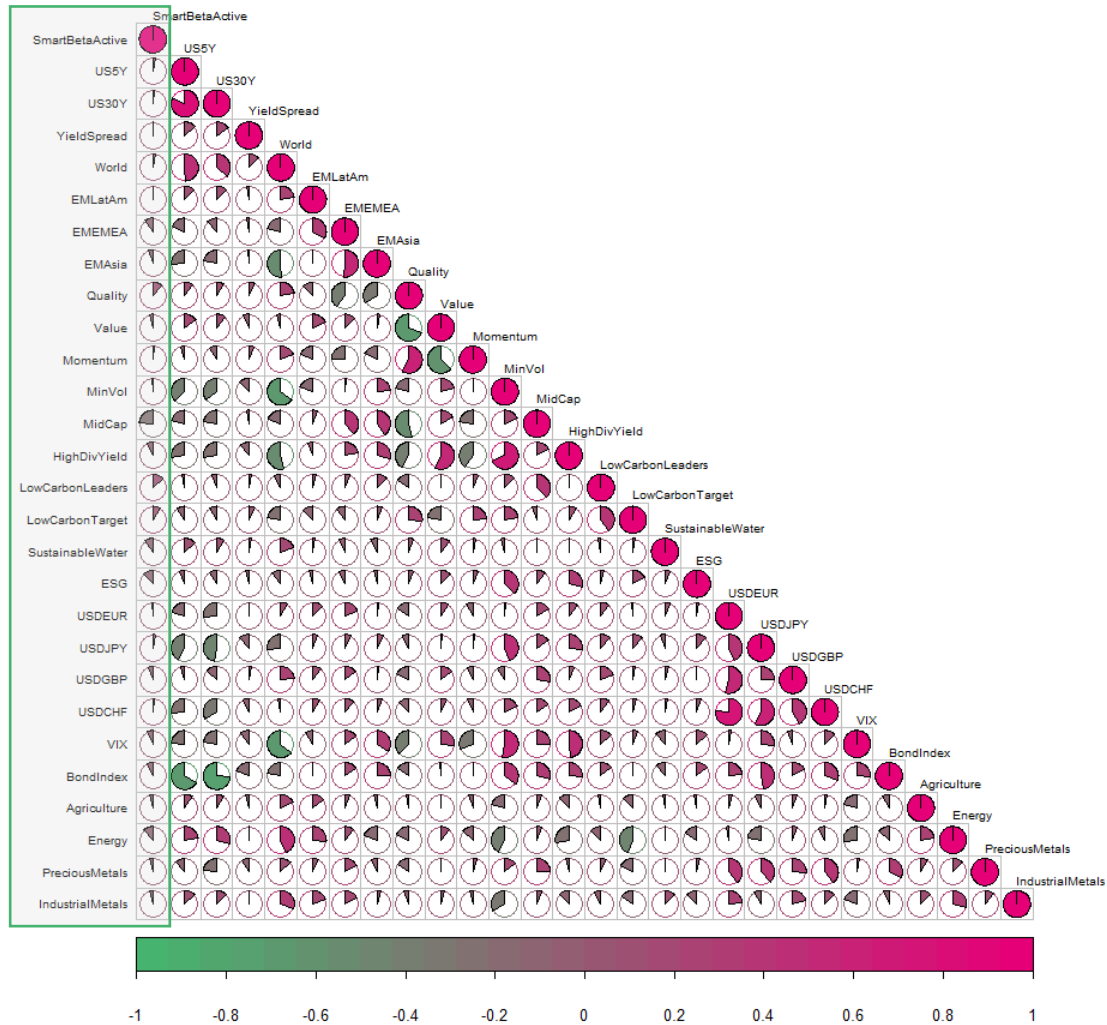


Figure 2

Source: Osmosis IM, Bloomberg, S&P, MSCI. Data as at end March 2020.

The MSCI World ESG Index is negatively correlated (-0.12) with the Smart Beta active returns. This might simply be explained by the fact that ESG also evaluates companies on their social and governance performance, which is again a very different approach to the one taken by Osmosis.

In all other cases the variables show very small or no correlations with the Smart Beta active return.

Multivariate regressions

In this section we look at the Osmosis Smart Beta active return in a multivariate regression. Table 1 shows three columns. In Column (1), we regress the dependent variable to be explained — the daily active return of the Smart Beta Fund since it went live, on the returns of the independent explanatory variables outlined in the Appendix. In Column (2), we regress the Low Carbon Leaders active return on the same set of variables. The aim of the regression analysis is to test whether there are associations between shifts in the dependent variable and changes in the independent variables. If there is sufficient statistical evidence to demonstrate a relationship, the variable will have a significance level next to it, depicted via the asterisks. Changes in the explanatory variable will then be associated with changes in the response variable. The number of asterisks represent the statistical strength of the relationship.

Most importantly, to answer our earlier question of whether alternative explanations account for the Fund's performance, we look at the data at the bottom of Table 1. The adjusted R^2 value of 14% in Column (1) indicates the amount of variability in the Osmosis Smart Beta active return that can be collectively explained by all the independent variables. Even though we use an extensive list of explanatory variables to vet the Smart Beta, we are unable to explain much of its active return. Given that the holdings in the Smart Beta strategy are selected solely according to their RE score, we conclude that the Smart Beta active return is driven by the isolated resource efficiency signal derived from Osmosis' proprietary model.

The variable with the highest coefficient and significance is the active return on the MSCI World Low Carbon Leaders Index. The interpretation is that for a one standard deviation increase in the active Low Carbon Leaders return we would expect the Smart Beta active return to change by 0.28 standard deviations, holding all the other independent variables constant. This is consistent with the correlation plot above and indicates that shifts in the Smart Beta active returns are associated with shifts in the Low Carbon Leaders active returns. Nonetheless, the amount of variability in Smart Beta active returns that we can explain with this remains low.

Taking a look at the MSCI World Low Carbon Leaders Index in Column (2), we notice that we can explain nearly three times as much (adjusted R^2 of 0.40) of its active return with the same mainstream, replicable variables. We include the MSCI World Low Carbon Target Index as a control for exposure to low carbon stocks, which unsurprisingly helps to explain the active return series of the Low Carbon Leaders Index. The fact that we can explain a substantially higher portion of the active return variations of the Low Carbon Leaders Index suggests a higher exposure to the low emissions element alone; an exposure, which by itself is unable to explain a consequential part of the Smart Beta active returns.

All in all, the Osmosis MoRE World Smart Beta Fund therefore provides the standard factor exposures of the MSCI World Index with a significant reduction in the carbon, water, and waste footprint while deriving active risk from the idiosyncratic resource efficiency element.

Table 1. Can we explain the Smart Beta active return element?

	<i>Dependent variable:</i>	
	SmartBetaActive (1)	LowCarbonLeaders (2)
SmartBetaActive		0.19*** (0.04)
US5Y	-0.08 (0.08)	0.10 (0.08)
US30Y	-0.11 (0.07)	0.10 (0.12)
YieldSpread	-0.02 (0.02)	0.00 (0.02)
World	0.18** (0.08)	0.01 (0.09)
EMLatAm	0.01 (0.04)	0.07 (0.04)
EMEMEA	0.00 (0.06)	-0.04 (0.05)
EMAsia	0.13* (0.07)	-0.05 (0.05)
Quality	0.12 (0.09)	-0.21*** (0.07)
Value	0.12 (0.10)	0.01 (0.08)
Momentum	-0.18*** (0.06)	0.15*** (0.05)
MinVol	0.21** (0.09)	-0.00 (0.09)
MidCap	-0.33*** (0.08)	0.38*** (0.05)
HighDivYield	-0.18** (0.09)	-0.13 (0.08)
LowCarbonLeaders	0.28*** (0.06)	
LowCarbonTarget	-0.04 (0.06)	0.46*** (0.06)
SustainableWater	-0.11** (0.05)	-0.03 (0.04)
ESG	-0.10** (0.05)	-0.04 (0.05)
USDEUR	-0.03 (0.06)	0.04 (0.06)
USDJPY	0.05 (0.06)	-0.02 (0.06)
USDGBP	-0.04 (0.05)	0.06 (0.04)
USDCHF	0.02 (0.06)	-0.00 (0.04)
VIX	-0.05 (0.06)	0.07* (0.04)
BondIndex	-0.16*** (0.06)	0.17*** (0.06)
Agriculture	-0.02 (0.03)	0.00 (0.03)
Energy	-0.10 (0.07)	-0.02 (0.05)
PreciousMetals	0.03 (0.05)	-0.03 (0.05)
IndustrialMetals	0.02 (0.04)	-0.06* (0.03)
Constant	-0.00 (0.03)	0.00 (0.03)
Observations	686	686
R ²	0.18	0.43
Adjusted R ²	0.14	0.40

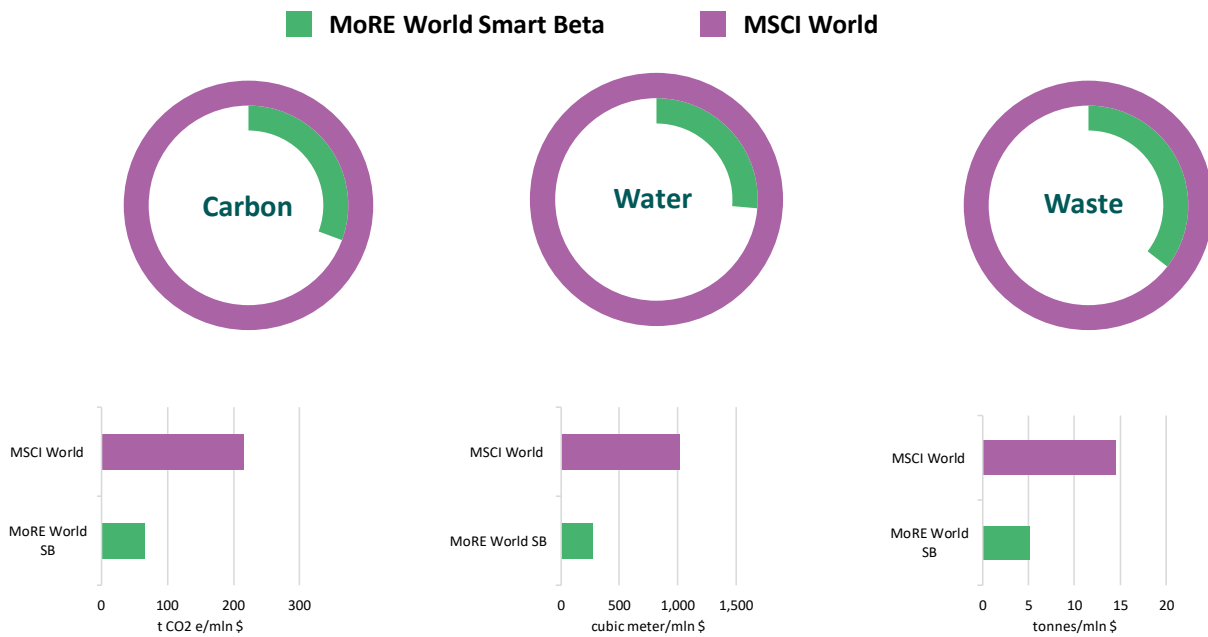
Note: *p<0.1; **p<0.05; ***p<0.01
 Ordinary Least Squares multiple regressions. The dependent variable is the Smart Beta active return and the Low Carbon Leaders active return on a daily frequency. The independent variables are the returns on various yields, currencies, commodity indices, as well as bond and equity indices. We use the active return of the equity indices relative to the MSCI World index. Variables have been standardised to have a mean of zero and a standard deviation of one. Newey-West standard errors are corrected for heteroskedasticity and autocorrelation.

Source: Osmosis IM, Bloomberg, S&P, MSCI. Data as at end March 2020.

Return analysis is conducted on an individual security basis and therefore is gross of fees and expenses.

Conclusion

The inability of the independent variables to explain a significant portion of the Smart Beta's idiosyncratic returns implies that these returns most likely emanate from another independent, uncorrelated variable. We conclude that, the most obvious remaining free variable in the strategy is the Osmosis RE factor, as defined by our proprietary Model of Resource Efficiency. At the same time, the Smart Beta Fund achieves a tangible and material reduction in the overall carbon, water and waste intensities of 69%, 74%, and 75% respectively relative to the MSCI World Index.



Source: Osmosis IM, Bloomberg, MSCI. Data as at end March 2020.

Figure 3

Source: Osmosis IM

Endnote

In Figure 4 below we plot the compounded active return on the Smart Beta Fund against the active return on the MSCI World Low Carbon Leaders Index. In this comparison, the Osmosis strategy is delivering sustained outperformance.

From an investment perspective, it appears that investing simply in low carbon stocks delivers an inferior outcome. It is proving more rewarding to look beyond carbon into water consumption and waste generation — creating a much more complete assessment of a company’s environmental footprint, and to do so relative to each unit of revenue generated.



Figure 4

Source: Osmosis IM, Bloomberg, S&P, MSCI. Data as at April 2020. The return series show the Smart Beta Fund active return gross of fees and the MSCI World Low Carbon Leaders Index active return gross of fees relative to the MSCI World between 24 May 2017 and 31 March 2020.

Appendix

The table below details all the market variables used in our correlation analysis. Active returns are computed relative to the MSCI World Total Return Gross (USD) Index. For the regression analysis, all variables are standardised to have a mean of zero and a standard deviation of one. Note that we tested a more extensive list of variables such as sector indices and individual commodities, including energy, softs, metals, the carbon emissions price, as well as many others.

Variable name	Definition
Smart Beta Active	The variable captures the active return of the Smart Beta Fund computed as the difference in return between the portfolio and its benchmark.
World	The variable captures the return of the MSCI World Total Return Gross (USD) Index. The MSCI World Index captures large and midcap representation across 23 Developed Markets countries. With 1,645 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.
EM LatAm EM EMEA EM Asia	The variables capture the active returns of the MSCI World Emerging Markets Latin America, MSCI World Emerging Markets Europe, Middle East & Africa, MSCI World Emerging Markets Asia Total Return Gross (USD) Indices. The MSCI Emerging Markets Latin America Index captures large and mid-cap representation across 6 Emerging Markets countries in Latin America. With 112 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country. The MSCI Emerging Markets EMEA Index captures large and mid-cap representation across 11 Emerging Markets (EM) countries in Europe, the Middle East and Africa (EMEA). With 173 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country. The MSCI Emerging Markets (EM) Asia Index captures large and mid-cap representation across 9 Emerging Markets countries in Asia. With 1,119 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.
Quality Value Momentum Min Vol Mid Cap High Div Yield	The variables capture the active returns of the MSCI World Quality, MSCI World Value, MSCI World Momentum, MSCI World Minimum Volatility, MSCI World Mid Cap, MSCI World High Dividend Yield Total Return Gross (USD) Indices. The MSCI World Quality Index is based on MSCI World, its parent index, which includes large and mid-cap stocks across 23 Developed Market countries. The index aims to capture the performance of quality growth stocks by identifying stocks with high quality scores based on three main fundamental variables: high return on equity (ROE), stable year-over-year earnings growth and low financial leverage. The MSCI World Value Index captures large and mid-cap securities exhibiting overall value style characteristics across 23 Developed Markets countries. The value investment style characteristics for index construction are defined using three variables: book value to price, 12-month forward earnings to price and dividend yield. The MSCI World Momentum Index is based on MSCI World, its parent index, which includes large and mid-cap stocks across 23 Developed Markets countries. It is designed to reflect the performance of an equity momentum strategy by emphasizing stocks with high price momentum, while maintaining reasonably high trading liquidity, investment capacity and moderate index turnover. The MSCI World Minimum Volatility (USD) Index aims to reflect the performance characteristics of a minimum variance strategy applied to the MSCI large and mid-cap equity universe across 23 Developed Markets countries. The index is calculated by optimizing the MSCI World Index, its parent index, for the lowest absolute risk (within a given set of constraints). The MSCI World Mid Cap Index captures mid cap representation across 23 Developed Markets countries.

	<p>The MSCI World High Dividend Yield Index is based on the MSCI World Index, its parent index, and includes large and mid-cap stocks across 23 Developed Markets countries. The index is designed to reflect the performance of equities in the parent index (excluding REITs) with higher dividend income and quality characteristics than average dividend yields that are both sustainable and persistent.</p>
<p>Low Carbon Leaders Low Carbon Target Sustainable Water ESG</p>	<p>The variables capture the active returns of the MSCI World Low Carbon Leaders, MSCI World Low Carbon Target, MSCI Global Sustainable Water, MSCI World ESG Total Return Gross (USD) Indices.</p> <p>The MSCI World Low Carbon Leaders Index is based on the MSCI World Index, its parent index, and includes large and mid-cap stocks across 23 Developed Markets countries. The index addresses two dimensions of carbon exposure – carbon emissions and fossil fuel reserves. By excluding companies with the highest carbon emissions intensity and the largest owners of carbon reserves per dollar of market capitalization, the index aims to achieve at least 50% reduction in its carbon footprint.</p> <p>The MSCI World Low Carbon Target Index is based on the MSCI World Index, its parent index, and includes large and mid cap stocks across 23 Developed Markets countries. The index aims for a tracking error target of 0.3% (30 basis points) while minimizing the carbon exposure. By overweighting companies with low carbon emissions (relative to sales) and those with low potential carbon emissions (per dollar of market capitalization), the index reflects a lower carbon exposure than that of the broad market.</p> <p>MSCI Global Sustainable Water Index includes developed and emerging market large, mid and small cap companies that derive 50% or more of their revenues from products and services in Sustainable Water.</p> <p>MSCI World ESG Leaders Index is a capitalization weighted index that provides exposure to companies with high Environmental, Social and Governance (ESG) performance relative to their sector peers.</p>
<p>US5Y US30Y Yield Spread</p>	<p>The variables capture the log changes of the United States 5-Year Treasury Note yield and the United States 30-Year Treasury Note yield, as well as the yield spread between the 10-Year Treasury Note and the 1-Year Treasury Note.</p>
<p>\$/€, \$/¥, \$/£, \$/SFr</p>	<p>The variables capture the returns of respective currency pairs.</p>
<p>VIX</p>	<p>The variable captures the return of the CBOE Volatility Index.</p> <p>The VIX Index is a calculation designed to produce a measure of constant, 30-day expected volatility of the U.S. stock market, derived from real-time, mid-quote prices of S&P 500® Index (SPXSM) call and put options.</p>
<p>Bond Index</p>	<p>The variable captures the return of the Barclays Bond Index.</p> <p>The Bloomberg Barclays Aggregate Bond Index includes government securities, mortgage-backed securities (MBS), asset-backed securities (ABS), and corporate securities to simulate the universe of bonds in the market.</p>
<p>Agriculture Energy Precious Metals Industrial Metals</p>	<p>The variables capture the returns of the SPGS Agriculture, SPGS Energy, SPGS Precious Metal, SPGS Industrial Metal Indices.</p> <p>The S&P GSCI Agriculture Index, a sub-index of the S&P GSCI, provides investors with a reliable and publicly available benchmark for investment performance in the agricultural commodity markets.</p> <p>The S&P GSCI Energy Index, a sub-index of the S&P GSCI, provides investors with a reliable and publicly available benchmark for investment performance in the energy commodity market.</p> <p>The S&P GSCI Precious Metals Index provides investors with a reliable and publicly available benchmark for investment performance in the precious metals market.</p> <p>The S&P GSCI Industrial Metals Index provides investors with a reliable and publicly available benchmark for investment performance in the industrial metals market.</p>

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