

MSCI WORLD ESG FACTOR SELECT INDEX METHODOLOGY

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Contents	1	Introduction.....	3
	2	MSCI ESG Research.....	4
	2.1	MSCI ESG Ratings	4
	3	Index Construction	5
	3.1	Underlying Sub-Indices.....	5
	3.2	Constructing Risk Controlled Underlying Sub-Indices	6
	3.2.1	Constructing Excess Return Variants	6
	3.2.2	Volatility Estimation	6
	3.2.3	Rebalance Schedule	8
	2.2.3	Exchange Holidays And Trading Day	8
	3.3	CLI signal	8
	3.4	Weight Calculation	8
	3.5	Management Fee Deduction.....	9
	4	Maintenance of the Index	10
	4.1	Monthly Index Reviews.....	10
	4.1.1	staggered rebalance	10
	4.2	Ongoing Event Related Changes	10
		Appendix I: Methodology for 10 Year Treasury Futures Index.	12
		Appendix II: Methodology for Underlying Sub-Indices.....	13

1 Introduction

The MSCI World ESG Factor Select Index aims to represent the performance of a rotational strategy that invests across 4 different risk controlled sub-indices representing different business cycles. Each sub-index is allocated a weight based on the Amplitude Adjusted Composite Leading Indicator for OECD Total by OECD.

2 MSCI ESG RESEARCH

The MSCI World ESG Factor Select Index uses company ratings and research provided by MSCI ESG Research. The index uses the following MSCI ESG Research products: MSCI ESG Ratings, MSCI ESG Controversies, MSCI Business Involvement Screening Research, and MSCI Climate Change Metrics.

For details on MSCI ESG Research’s full suite of ESG products, please refer to: <https://www.msci.com/esg-investing>

2.1 MSCI ESG RATINGS

MSCI ESG Ratings provides research, analysis and ratings of how well companies manage environmental, social and governance risks and opportunities.

MSCI ESG Ratings provides an overall company ESG rating - a seven-point scale from ‘AAA’ to ‘CCC’. In addition, the product provides scores and percentiles indicating how well a company manages each key issue relative to industry peers.

For more details on MSCI ESG Ratings, please refer to: <https://www.msci.com/esg-ratings>

3 Index Construction

The objective of the MSCI World ESG Factor Select Index methodology is to create a 5% volatility targeted index that dynamically allocates monthly to different factor components based on a well-known macro signal: Amplitude Adjusted Composite Leading Indicator for OECD Total ¹(CLI) by OECD.

The methodology defines different economic regimes such as expansion, contraction, recovery and slowdown based on the CLI signal outputs and allocates weights to one of the underlying ESG factor indices, monthly, on the basis of these values.

Each of the underlying sub-indices is risk controlled at a target volatility of 5% for the blended index to achieve the desired volatility level. In the risk control mechanism, the ‘safe asset’ is an investment in a 10-year US Treasury Futures Index and the ‘risky asset’ is the respective underlying ESG factor index. The process in detail is as follows:

3.1 UNDERLYING SUB-INDICES

The index utilizes 4 custom underlying sub-indices to represent different economic regimes. The 4 underlying sub-indices created are:

- MSCI World Select ESG Ratings Momentum Index
- MSCI World Select ESG Ratings Minimum Volatility Index
- MSCI World Select ESG Ratings Enhanced Value Index
- MSCI World Select ESG Ratings Sector Neutral Quality Index

A detailed explanation of their construction process can be found at Appendix II

¹ <https://data.oecd.org/leadind/composite-leading-indicator-cli.htm>

3.2 CONSTRUCTING RISK CONTROLLED UNDERLYING SUB-INDICES

3.2.1 CONSTRUCTING EXCESS RETURN VARIANTS

To create Excess Return Variants of the above underlying sub-indices, the Effective Fed Funds Rate² is deducted daily from Gross Total Return variants of each of the above underlying sub-indices:

$$IR_{t-1} = FedFunds_{t-1} * \frac{Act(t-1,t)}{360}$$

Where:

$FedFunds_{t-1}$ = Effective Fed Funds rate on date t-1

3.2.2 VOLATILITY ESTIMATION

From each of the above excess return variants of underlying sub-indices, 5% Target Risk Controlled sub-indexes are created.

The indexes are constructed using underlying the sub-indices and a rolling position in 10-year US Treasury Futures Index³, selecting the combination of weights that maximizes equity weight with recent volatility of 5%, pursuant to the following formula (volatility and correlation are calculated as the maximum of the 1m, 3m and 6m sample standard deviation of daily log returns, and maximum of the 1m, 3m and 6m correlation of daily log returns):

$$EquityWeight = \max \left(0\%, \min \left(100\%, \frac{X + \sqrt{(X)^2 - Y * \left(VolBond^2 - \frac{VT^2}{252} \right)}}{Y} \right) \right)$$

$$BondWeight = 100\% - EquityWeight$$

WHERE

$$X = VolBnd^2 - VolEq * VolBnd * Correl$$

$$Y = VolEq^2 + VolBnd^2 - 2 * VolEq * VolBnd * Correl$$

VT = Volatility Target at 5%

² <https://www.newyorkfed.org/markets/reference-rates/effr>

³ Please refer to Appendix I

$VolBnd$ = Maximum of 1 month, 3 month and 6 month annualised volatility of reference 10-year US Treasury Futures index

$VolEq$ = Maximum of 1 month, 3 month and 6 month annualised volatility of respective underlying equity sub-index

$Correl$ = Maximum of 1 month, 3 month and 6 month correlation of returns of respective underlying equity sub-index and reference 10-year US Treasury Futures index

$EquityWeight$ = Weight allocated to excess return variant of respective underlying sub-index

$BondWeight$ = Weight allocated to reference 10-year US Treasury Futures index

If no result is found for $EquityWeight$ (i.e., if the discriminant is negative), then for each risk-controlled underlying sub-index

1. Preliminary weights are calculated as:

$$PrEqWt = \max\left(0\%, \min\left(100\%, \frac{X}{Y}\right)\right)$$

$$PrBndWt = 100\% - PrEqWt$$

Where

$$X = VolBnd^2 - VolEquity * VolBond * Correl$$

$$Y = VolEquity^2 + VolBond^2 - 2 * VolEquity * VolBond * Correl$$

$PrEqWt$ = Preliminary Weight allocated to excess return variant of respective underlying sub-index

$PrBndWt$ = Preliminary Weight allocated to 10-year US Treasury Futures index

2. Preliminary volatility is calculated as:

$$VolPrelim = \sqrt{252 * \sqrt{PrEqWt^2 * VolEq^2 + PrBndWt^2 * VolBnd^2 + 2 * PrEqWt * PrBndWt * VolEq * VolBnd * Correl}}$$

3. Final weights are calculated as:

$$Equity \ Final \ Weight = PrEqWt * \frac{5\%}{VolPrelim}$$

$$Bond \ Final \ Weight = PrBndWt * \frac{5\%}{VolPrelim}$$

3.2.3 REBALANCE SCHEDULE

The risk controlled underlying sub-indices rebalance monthly on 1st trading day of the month. Index Leverage applicable is determined using the underlying sub-index volatility estimated two trading days before the rebalance date.

2.2.3 EXCHANGE HOLIDAYS AND TRADING DAY

The Risk Controlled sub-indices are not rebalanced on a NYSE, CME, London Stock Exchange, SIX Swiss Stock Exchange, Tokyo Stock Exchange, Toronto Stock Exchange and Xetra exchange holiday. Any business day that is not a NYSE, CME, London Stock Exchange, SIX Swiss Stock Exchange, Tokyo Stock Exchange, Toronto Stock Exchange and Xetra exchange holiday is defined as Trading Day (“TD”).

3.3 CLI SIGNAL

A CLI derived signal is used for allocating weights between different risk controlled underlying sub-indices. We calculate a derivative of CLI as:

$$CLI_{change} = CLI(t) - CLI(t - 6m)$$

Where:

$CLI(t)$ = The latest available CLI value as of t

$CLI(t - 6m)$ = The latest available 6-month prior CLI value as of t

3.4 WEIGHT CALCULATION

At each 1st Trading date of the month, 100% weight, staggered over subsequent 5 trading days, is allocated to any of the Regime Sub Index based on the following rule:

- If $CLI_{change}(t - 2) \geq 0$ and $CLI(t - 2) \geq 100$ Then Expansion = 100%
- If $CLI_{change}(t - 2) \geq 0$ and $CLI(t - 2) < 100$ Then Recovery = 100%
- If $CLI_{change}(t - 2) < 0$ and $CLI(t - 2) \geq 0$ Then Slowdown = 100%
- If $CLI_{change}(t - 2) < 0$ and $CLI(t - 2) < 0$ Then Contraction = 100%

Where:

t: 1st trading day of the month

t - 2: 2 trading days prior to 1st trading day of the month

Expansion = Weight Allocated to Risk Controlled MSCI World Select ESG Ratings Momentum Index
 Recovery = Weight Allocated to Risk Controlled MSCI World Select ESG Ratings Minimum Volatility Index
 Slowdown = Weight Allocated to Risk Controlled MSCI World Select ESG Ratings Enhanced Value Index
 Contraction = Weight Allocated to Risk Controlled MSCI World Select ESG Ratings Sector Neutral Quality Index

3.5 MANAGEMENT FEE DEDUCTION

For calculating the final index level, from the index calculated above, a 0.50% management fee is deducted from the index. The methodology for management fee deduction is as follows:

$$IL(t) = IL(t - 1) * \left(\frac{BIL(t)}{BIL(t - 1)} - 0.50\% * \frac{Act(t - 1, t)}{360} \right)$$

Where:

$IL(t)$ = Index Level of MSCI World ESG Factor Select Index on date t

$BIL(t)$ = Index Level of pre management fee deducted Index on date t

4 Maintenance of the Index

4.1 MONTHLY INDEX REVIEWS

The Index is reviewed on a monthly basis.

4.1.1 STAGGERED REBALANCE

The monthly Index rebalance is staggered over a period of 5 days starting on the first trading day of each month.

4.2 ONGOING EVENT RELATED CHANGES

The following section briefly describes the treatment of common corporate events within each of the reference indices of the Index:

MSCI World Select ESG Ratings Momentum Index
 MSCI World Select ESG Ratings Minimum Volatility Index
 MSCI World Select ESG Ratings Enhanced Value Index
 MSCI World Select ESG Ratings Sector Neutral Quality Index

No new securities will be added (except where noted below) to the Index between Index Reviews. For cases where additions are noted below, securities will be added to the index only if added to the parent index. Parent Index deletions will be reflected simultaneously.

EVENT TYPE

EVENT DETAILS

New additions to the Parent Index

A new security added to the Parent Index (such as IPO and other early inclusions) will not be added to the index.

Spin-Offs

All securities created as a result of the spin-off of an existing Index constituent will not be added to the Index at the time of event implementation. Reevaluation for continued inclusion in the Index will occur at the subsequent Index Review.

Merger/Acquisition

For Mergers and Acquisitions, the acquirer’s post event weight will account for the proportionate amount of shares involved in deal consideration, while cash proceeds will be invested across the Index.

If an existing Index constituent is acquired by a non-Index constituent, the existing constituent will be deleted from the Index and the acquiring non-constituent will not be added to the Index.

Changes in Security Characteristics

A security will continue to be an Index constituent if there are changes in characteristics (country, sector, size segment, etc.) Reevaluation for continued inclusion in the Index will occur at the subsequent Index Review.

Further detail and illustration regarding specific treatment of corporate events relevant to this Index can be found in the MSCI Corporate Events Methodology book under the sections detailing the treatment of events in Capped Weighted and Non-Market Capitalization Weighted indexes.

The MSCI Corporate Events methodology book is available at: <https://www.msci.com/index-methodology>

Appendix I: Methodology for 10 Year Treasury Futures Index

The index methodology of 10-Year US Treasury Futures Index (iEdge U.S. Treasury Notes Futures Index) as of 4th June 2020 has been published at:

https://api2.sgx.com/sites/default/files/2020-06/iEdge%20US%20Treasury%20Futures%20Index%20-%20Index%20Methodology_DCI_A4_4%20Jun%202020_1.pdf

Appendix II: Methodology for Underlying Sub-Indices

The following underlying sub-indices listed below are constructed from MSCI World Index (Parent Index).

MSCI World Select ESG Ratings Minimum Volatility Index
 MSCI World Select ESG Ratings Momentum Index
 MSCI World Select ESG Ratings Enhanced Value Index
 MSCI World Select ESG Ratings Sector Neutral Quality Index

The following steps are applied at initial construction as well as at subsequent Semi-Annual Index Reviews of the component indices:

- ESG Eligibility Criteria
- Security Weighting

ESG ELIGIBILITY CRITERIA

The underlying sub-indices use MSCI ESG Ratings to rate companies based on the environmental, social, or governance impact of their operations and/or products and services. Companies in the Parent Index are required to have an MSCI ESG Ratings of A or above to be eligible for inclusion in the underlying sub-indices.

SECURITY WEIGHTING

MSCI WORLD SELECT ESG RATINGS MINIMUM VOLATILITY INDEX

The securities from the eligible universe follow a methodology in line with MSCI World Minimum Volatility Index to create MSCI World Select ESG Ratings Minimum Volatility Index. The methodology for reference MSCI World Minimum Volatility Index can be retrieved from MSCI's website at:

<https://www.msci.com/index-methodology>

MSCI WORLD SELECT ESG RATINGS MOMENTUM INDEX

The securities from the eligible universe follow a methodology in line with MSCI World Momentum Index to create MSCI World Select ESG Ratings Momentum Index. The methodology for reference MSCI World Momentum Index can be retrieved from MSCI's website at:

<https://www.msci.com/index-methodology>

MSCI WORLD SELECT ESG RATINGS ENHANCED VALUE INDEX

The securities from the eligible universe follow a methodology in line with MSCI World Enhanced Value Index to create MSCI World Select ESG Ratings Enhanced Value Index. The methodology for reference MSCI World Enhanced Value Index can be retrieved from MSCI's website at:

<https://www.msci.com/index-methodology>

MSCI WORLD SELECT ESG RATINGS SECTOR NEUTRAL QUALITY INDEX

The securities from the eligible universe follow a methodology in line with MSCI World Sector Neutral Quality Index to create MSCI World Select ESG Ratings Sector Neutral Quality Index. The methodology for reference MSCI World Sector Neutral Quality Index can be retrieved from MSCI's website at:

<https://www.msci.com/index-methodology>

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