

Methodology Book For:

- **MSCI Global Economic Regime Rotator Select Index**
- **MSCI Global Economic Regime Rotator Select 5% Risk Control Index**

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1 Introduction

The MSCI Global Economic Regime Rotator Select Index¹ (the 'Index') aims to represent the performance of a strategy that allocates daily to the MSCI World Index, a Treasury Bond ETF Component, a TIPS Bond ETF Component and a Gold Component based on the GDP Growth Indicator and Inflation Indicator calculated by QuantCube Technology².

The MSCI Global Economic Regime Rotator Select 5% Risk Control Index aims to represent the performance of the Excess Return of Index while targeting a risk level of 5%.

¹ The Index is governed by a set of methodology and policy documents ("Methodology Set"), including the present index methodology document. Please refer to Appendix 1 for more details.

² QuantCube is a cross-sectoral Research & Development company which analyses billions of alternative data points in real time to uncover macroeconomic insights ahead of the market for investment. Please refer to Appendix 2 for details.

2 Constructing the MSCI Global Economic Regime Rotator Select Index

The Index is reviewed daily by identifying the economic regime³ based on the GDP Growth Indicator and Inflation Indicator calculated by QuantCube Technology.

2.1 Determining the Component Index Weight

On each business day⁴ and at initial construction, based on the economic regime, the following weights⁵ are assigned to the MSCI World Index, the Treasury Bond ETF linked index, the TIPS Bond ETF linked index and the Gold Trust linked index ("Component Indexes")⁶:

Component Weight	MSCI World Index	Treasury Bond ETF linked index	TIPS Bond ETF linked index	Gold Trust linked index
Slow Growth	20%	60%	0%	20%
Goldilocks	60%	40%	0%	0%
Stagflation	40%	0%	20%	40%
Heating Up	80%	0%	20%	0%

At each index calculation day⁷, the weights of each of the Component Indexes defined in the previous step are averaged over the previous five business days. These averaged weights are subsequently allocated as the final weights for each of the Component Indexes.

³ Please refer to Section 2 of [MSCI Economic Regime Allocator Indexes Methodology](#) for the economic regime definition and Appendix 3 for steps of economic regime determination.

⁴ The business day defined as each weekday from Monday to Friday.

⁵ The weights assigned to the Component Indexes are re-weighted to their target allocation daily even if there is no change in the Economic Regime identified.

⁶Please refer to Appendix 3 for details of the ETF components.

⁷ The index calculation day is defined as all the index business days except the days that are full holidays in New York Stock Exchange, London Stock Exchange, Deutsche Börse Xetra, Tokyo Stock Exchange, SIX Swiss Exchange, Toronto Stock Exchange, or Euronext Paris.

3 Constructing the MSCI Global Economic Regime Rotator Select 5% Risk Control Index

The MSCI Global Economic Regime Rotator Select 5% Risk Control Index is constructed by applying the following steps to the MSCI Global Economic Regime Rotator Select Index:

- Applying the MSCI Excess Return Indexes methodology
- Constructing the Risk Control Index

3.1 Applying the MSCI Excess Return Indexes Methodology

The MSCI Excess Return Indexes Methodology⁸ is applied on each index calculation day on the MSCI Global Economic Regime Rotator Select Index in USD to construct the Excess Return Variant Index⁹.

3.2 Constructing the Risk Control Index

The objective of the Risk Control Index is to replicate the performance of a strategy that targets 5% of volatility by adjusting the weight of the Excess Return Variant Index calculated in 3.1.

The Risk Control Index is calculated on each index calculation day in accordance with the below formula:

$$IL_t = IL_{t-1} \times (1 + IR_t)$$

where:

IL_t is the Risk Control Index level on calculation day t

IR_t is the Risk Control Index return on calculation day t , calculated in accordance with the following formula:

$$IR_t = W_t \times E_t$$

where:

$$E_t = \frac{\text{Excess Return Variant Index}_t}{\text{Excess Return Variant Index}_{t-1}} - 1$$

$$W_t = \text{Minimum} \left(1, \frac{\text{TargetRiskLevel}}{\sigma_t} \right)$$

where:

$\text{TargetRiskLevel} = 5\%$

$\sigma_t = \text{Volatility}^{10}$ of the Excess Return Variant Index.

⁸ Please refer to the MSCI Excess Return Indexes methodology at <https://www.msci.com/index-methodology>.

⁹ The short-term rate used for the application of the Excess Return Indexes methodology is Fed Fund overnight until December 31st 2018 and SOFR overnight from January 1st, 2019.

¹⁰ Please refer to Appendix 4 for volatility estimation formula.

4 Handling Suspect or Missing GDP Growth Indicator and Inflation Indicator

If, at an Index Review, MSCI determines that the primary source data from QuantCube Technology is not reflective of the market conditions or there is a temporary outage of data for 4 or more business days, the economic regime identification, index component weight allocation and weight calculation will be determined based on latest available OECD CLI¹¹ and OECD CPI¹² values as per the following steps (“fallback mechanism”)¹³:

- Calculation of change in OECD CLI
- Calculation of change in OECD CPI
- Rules to assign economic regimes
- Determining the index component weights

When the fallback mechanism comes into effect, the index review frequency will change from daily to a quarterly basis to coincide with the Quarterly Index Reviews.

Subsequently, a review of an appropriate data source for the GDP Growth Indicator and Inflation Indicator would be conducted. The adoption of an alternative data source and any amendments to the methodology to reflect this will be announced to all clients simultaneously. MSCI may consult with clients to gather their feedback on the choice of alternative sources in line with MSCI Index Consultation Policy¹⁴.

¹¹ Please refer to OECD CLI at: [Leading indicators - Composite leading indicator \(CLI\) - OECD Data](#).

¹² Please refer to OECD CPI at: [Prices - Inflation \(CPI\) - OECD Data](#).

¹³ Please refer to Appendix 5 of [MSCI Economic Regime Allocator Indexes Methodology](#) for detailed steps of applying Fallback Mechanism.

¹⁴ Please refer to MSCI Index Policies document at: <https://www.msci.com/index-methodology>.

5 Maintaining the MSCI Global Economic Regime Rotator Select Index and the MSCI Global Economic Regime Rotator Select 5% Risk Control Index

5.1 Indexes Reviews

The MSCI Global Economic Regime Rotator Select Index is reviewed on each index calculation date as per the steps described in Section 2.1. The pro forma Index for the MSCI Economic Regime Rotator Select Index is announced three business days before the effective date.

The MSCI Global Economic Regime Rotator Select 5% Risk Control Index is calculated on each index calculation date as per steps described in Section 3.

5.2 Ongoing Event-Related Changes

The MSCI Global Economic Regime Rotator Select Index is derived from the index Components. Corporate events are reflected in the MSCI Global Economic Regime Rotator Select Index as they occur and as they are captured in the respective index Components.

Appendix 1: Methodology Set

The Index is governed by a set of methodology and policy documents (“Methodology Set”), including the present index methodology document as mentioned below:

- Description of methodology set – www.msci.com/index/methodology/latest/ReadMe
- MSCI Corporate Events Methodology – www.msci.com/index/methodology/latest/CE
- MSCI Index Calculation Methodology – www.msci.com/index/methodology/latest/IndexCalc
- MSCI Index Glossary of Terms – www.msci.com/index/methodology/latest/IndexGlossary
- MSCI Index Policies – www.msci.com/index/methodology/latest/IndexPolicy
- MSCI Global Investable Market Indexes Methodology – www.msci.com/index/methodology/latest/GIMI
- MSCI Excess Return Indexes Methodology - www.msci.com/index/methodology/latest/RC
- MSCI ETF linked Index Methodology - <https://www.msci.com/index-methodology>

The Methodology Set for the Indexes can also be accessed from MSCI’s webpage <https://www.msci.com/index-methodology> in the section ‘Search Methodology by Index Name or Index Code’.

Appendix 2: QuantCube Indicators

The following two indicators from QuantCube Technology are used in the construction of the MSCI Economic Regime Rotator Select Indexes.

GDP Growth Indicator

- GDP Growth Indicator tracks year-over-year (YoY) economic growth at a country level in real-time. It relies exclusively on real-time alternative data to provide timely insights ahead of official numbers or other nowcast models relying on official data. GDP Growth Indicator for USA and China are considered for the construction of MSCI Global Economic Regime Rotator Select Indexes.

Inflation Indicator

- Inflation Indicator is a real-time indicator that quantifies the current Consumer Price Index at a country level by crossing and aggregating multiple subcomponents like Motor Fuels, Fruits, Vegetables and others. Inflation Indicator for USA is considered for the construction of MSCI Global Economic Regime Rotator Select Indexes.

For further details on the calculation methodology, please refer to

[Real-time macro nowcasting for GDP, Inflation, Investment Decisions – Quant Cube Technology \(quant-cube.com\)](https://www.quant-cube.com/).

Appendix 3: ETF Components

The below ETF linked indexes¹⁵ are used as the Components:

Component Indexes	Linked ETF Name	RIC	SEDOL	CUSIP	ISIN	Ticker	Exchange	Price Currency	Close Type
Gold Trust linked index	ISHARES GOLD TRUST	IAU.P	BMDB791	464285204	US4642852044	IAU	NYSE ARCX	USD	Close Price
Treasury Bond ETF linked index	ISHARES 7-10 YEAR TREASURY BOND ETF	IEF.OQ	2971494	464287440	US4642874402	IEF	XNMS	USD	Close Price
TIPS Bond ETF linked index	ISHARES 0-5 YEAR TIPS BOND ETF	STIP.P	B4N6VX2	46429B747	US46429B7477	STIP	NYSE ARCX	USD	Close Price

If any ETF will cease to exist, a review of an alternative component would be conducted. The adoption of an alternative component and any amendments to the methodology to reflect this will be announced to all clients simultaneously. MSCI may consult with clients to gather their feedback on the choice of alternative sources in line with MSCI Index Consultation Policy¹⁶.

¹⁵ Please refer to MSCI ETF linked Indexes Methodology at: <https://www.msci.com/index-methodology>.

¹⁶ Please refer to MSCI Index Policies document at: www.msci.com/index/methodology/latest/IndexPolicy.

Appendix 4: Volatility Calculation

The returns of the Excess Return Variant Index in USD are used for volatility estimation for the MSCI Global Economic Regime Rotator Select 5% Risk Control Index. The volatility estimation approach takes into account both the short-term and the long-term volatility trends of the Excess Return Variant Index and is calculated as the maximum of two volatility estimates: the short-term realized volatility estimate, calculated over a short horizon of 20 days, and the long-term realized volatility estimate, calculated over a long horizon of 60 days.

The volatility estimation approach uses equally weighted daily excess returns of Excess Return Variant Index for both horizons.

The volatility calculation formulae are described below:

$$Volatility_t = \text{Max}(\text{Short-term Realized Volatility}_t, \text{Long-term Realized Volatility}_t)$$

$$\text{Realized Volatility}_t = \sqrt{252 \times \text{Variance}(t)}$$

$$\text{Variance}(t) = (1/N) \times \sum_{t^*=N+1}^{t^*} \left\{ \ln \frac{Index\ 1_t}{Index\ 1_{t-1}} \right\}^2$$

Where:

N = Total number of calculation days used for variance calculation and varies for short-term volatility estimate ($N = 20$) and long-term volatility estimate ($N = 60$)

$$t^* = t - i$$

Where:

t is calculation day t

i is the number of “days lag” in the return calculation used for computing volatility (i.e., the lag between the return date and the volatility calculation date), 2 days.

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