

# **MSCI CHINA ALL SHARES ESG UNIVERSAL 3% RISK CONTROL SELECT INDEX**

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## **1 Introduction**

The MSCI China All Shares ESG Universal 3% Risk Control Select Index (the “Index”) aims to represent the performance of the MSCI China All Shares ESG Universal Index while targeting an annualized volatility of 3%.

The Index incorporates various adjustments in its calculations as described in this methodology book.

## 2 Constructing the MSCI China All Shares ESG Universal 3% Risk Control Select Index

The MSCI China All Shares ESG Universal 3% Risk Control Select Index is constructed by applying the following steps to the MSCI China All Shares ESG Universal Index:

- Defining the Parent Index
- Constructing the Cost-deducted Parent Index
- Constructing the Volatility Target Index
- Applying the MSCI Excess Return Indexes methodology<sup>1</sup>.

### 2.1 DEFINING THE PARENT INDEX

The Index is constructed from the MSCI China All Shares ESG Universal Index (the “Parent Index”).

### 2.2 CONSTRUCTING THE COST-DEDUCTED PARENT INDEX

The Cost-deducted Parent Index is constructed by applying the following formula:

$$CIL_t = CIL_{t-1} \times \left\{ \left( \frac{BIL_t}{BIL_{t-1}} \right) - ReplicationCost \times \frac{ACT(t-1,t)}{360} \right\}$$

Where:

$CIL_t$  = Index Level of the Cost-deducted Parent Index on date t

$BIL_t$  = Index Level of Parent Index on date t

$ReplicationCost = 0.50\%$

$ACT(t - 1, t)$  = number of actual calendar days between day t-1 and t

### 2.3 CONSTRUCTING THE VOLATILITY TARGET INDEX

The objective of the Volatility Target Index is to replicate the performance of the strategy that targets 3% of volatility by varying the weights of the cost-deducted Parent Index and a cash component.

The Volatility Target Index is calculated in accordance with the below formula:

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

<sup>1</sup> Please refer to the MSCI Excess Return Indexes methodology at [www.msci.com/index-methodology](http://www.msci.com/index-methodology)

Where:

$IL_t$  is the Volatility Target Index levels on day t

$IR_t$  is the Volatility Target Index return on day t, calculated in accordance with the following formula:

$$IR_t = W_t \times E_t + (1 - W_t) \times CashRet_t - TC_t$$

Where:

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

Where:

$$TargetRiskLevel = 3\%$$

$\sigma_t$  = volatility<sup>2</sup> of the Cost-deducted Parent Index

$$E_t = \frac{CIL_t}{CIL_{t-1}} - 1$$

$$CashRet_t = Rate_{t-1} \times \frac{ACT(t-1, t)}{360}$$

Where:

$Rate_{t-1}$  = SOFR<sup>3</sup> (Secured Overnight Financing Rate)

$ACT(t-1, t)$  = number of actual calendar days between day t-1 and t

$TC_t$  is used to represent rebalancing costs that may arise at the Index rebalance and determined in accordance with the following formula:

$$TC_t = C \times ABS(W_t - W_{t-1})$$

where:

$$C = 0.10\%$$

$W_t, W_{t-1}$  : Cost-deducted Parent Index weight as of day t and day t - 1 respectively

<sup>2</sup> Please refer to the Appendix for details on volatility calculation

<sup>3</sup> LIBOR USD rate is used until 1-Dec-2014 as of day t-1, post which SOFR is used

## 2.4 APPLICATION OF THE MSCI EXCESS RETURN INDEXES METHODOLOGY

The MSCI Excess Return Indexes Methodology<sup>4</sup> is applied sequentially on the Volatility Target index from Section 2.3 to construct the MSCI China All Shares ESG Universal 3% Risk Control Select Index. The short-term rate used for the application of the excess return methodology is SOFR (Secured Overnight Financing Rate)<sup>5</sup>.

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<sup>4</sup> Please refer to the MSCI Excess Return Indexes methodology at [www.msci.com/index-methodology](http://www.msci.com/index-methodology)

<sup>5</sup> LIBOR USD rate is used until 1-Dec-2014 as of day t-1, post which SOFR is used

## **3 Maintenance of the Index**

### **3.1 INDEX REVIEWS**

The Index is reviewed on a daily basis as per steps described in Section 2.

### **3.2 ONGOING EVENT RELATED CHANGES**

In general, the Index follows the event maintenance of the Parent Index. Any security added or deleted from a Parent Index follows the same treatment in the corresponding MSCI Custom Weighted Index that uses the component index.

## Appendix: Volatility Calculation

The returns of the Cost-deducted Parent Index in USD are used for volatility estimation. The volatility estimation approach takes into account both the short-term and the long-term volatility trends of the Cost-deducted Parent 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 gross total returns of Cost-deducted Parent Index for both horizons.

The volatility calculation formulae are described below:

$$Volatility_t =$$

$$Max(Short-term Realized Volatility_t, Long-term Realized Volatility_t)$$

$$Realized Volatility_t = \sqrt{252 \times Variance(t)}$$

$$Variance(t) = (1/N) \times \sum_{t^*-N+1}^{t^*} \left\{ \ln \left( \frac{CIL_t}{CIL_{t-1}} \right) \right\}^2$$

Where:

$N$  = Total number of historical trading 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:

$i$  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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