

MSCI World 12% Volatility Target Select Index Methodology

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1 Introduction

The MSCI World 12% Volatility Target Select Index (the 'Index') aims to represent the performance of the MSCI World Index while targeting an annualized volatility of 12%.

2 Constructing the MSCI World 12% Risk Control Index

The objective of the Index is to replicate the performance of a strategy that targets 12% of volatility by adjusting the weight of the MSCI World Index¹ (the 'Parent Index') and a cash component².

The Index is calculated in accordance with the below formula:

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

Where:

IL_t is the Index levels on calculation day³ t

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

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

Where:

$$W_t = \begin{cases} W_{t-1}, & \text{ABS}\left(\frac{W_{t*} - W_{t-1}}{W_{t-1}}\right) \leq 5\% \\ W_{t*}, & \text{ABS}\left(\frac{W_{t*} - W_{t-1}}{W_{t-1}}\right) > 5\% \end{cases}$$

Where:

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

Where:

$$TargetRiskLevel = 12\%$$

$$\sigma_t = \text{Volatility}^4 \text{ of the Parent Index}$$

$$E_t = \frac{Parent Index_t}{Parent Index_{t-1}} - 1$$

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

$$ACT(t-1, t) = \text{number of actual calendar days between calculation day } t-1 \text{ and } t$$

Where:

W_t, W_{t-1} : Parent index weights as of calculation day t and calculation $t-1$ respectively.

¹ Price Return variant in EUR currency.

² The cash component is EURIBOR minus 0.085% until December 31 2021, and ESTR overnight from January 1 2022.

³ Calculation day means any trading day except full holidays in New York Stock Exchange, Deutsche Börse Xetra or Tokyo Stock Exchange.

⁴ Please refer to the Appendix 1 for details on volatility calculation.

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

The Index is derived from the Parent Index. As a result, corporate events are reflected in the Index as they occur and as they are captured in the Parent Index.

Appendix 1: Volatility Calculation

The price returns of the Parent Index in EUR are used for volatility estimation for the Index. The volatility is defined as the realized volatility estimate, calculated over a horizon of 20 days.

The volatility calculation formulae are described below:

$$Volatility_t = Realized\ Volatility_t$$

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

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

Where:

N = Total number of calculation days used for variance calculation for volatility estimate ($N = 20$).

$$t^* = t - i$$

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), 3 days.

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