

# INDEX GUIDELINE

UBS LIFE PILOT USD

Version 1.1

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## INTRODUCTION

This document (the "**GUIDELINE**") is to be used as a guideline with regard to the composition, calculation and maintenance of the UBS Life Pilot USD (the "**INDEX**"). Any amendments to the rules made to the **GUIDELINE** are approved by the **OVERSIGHT COMMITTEE** specified in Section 5.5. The **INDEX** is calculated, administered and published by Solactive AG ("**SOLACTIVE**") assuming the role as administrator (the "**INDEX ADMINISTRATOR**") under the Regulation (EU) 2016/1011 (the "**BENCHMARK REGULATION**" or "**BMR**"). The name "Solactive" is trademarked.

*The text uses defined terms which are formatted with "SMALL CAPS". Such Terms shall have the meaning assigned to them as specified in Section 6 (Definitions).*

**The GUIDELINE and the policies and methodology documents referenced herein contain the underlying principles and rules regarding the structure and operation of the INDEX. SOLACTIVE does not offer any explicit or tacit guarantee or assurance, neither pertaining to the results from the use of the INDEX nor the level of the INDEX at any certain point in time nor in any other respect. SOLACTIVE strives to the best of its ability to ensure the correctness of the calculation. There is no obligation for SOLACTIVE – irrespective of possible obligations to issuers – to advise third parties, including investors and/or financial intermediaries, of any errors in the INDEX. The publication of the INDEX by SOLACTIVE does not constitute a recommendation for capital investment and does not contain any assurance or opinion of SOLACTIVE regarding a possible investment in a financial instrument based on this INDEX.**



# 1. INDEX SPECIFICATIONS

## 1.1. SCOPE OF THE INDEX

The UBS Life Pilot Net Index ER USD (the "INDEX") is an Index of UBS AG and is administrated by Solactive AG.

The INDEX aims to generate stable returns under different market conditions with 5% target volatility. It consists of a diversified portfolio of 6 cost efficient underlyings across asset classes (Equities, Bonds) in developed regions.

The INDEX consists of three Volatility Targeted Sub-Indices, each corresponding to an observed price trend in three trend windows - 6 months, 9 months and 12 months. The Sub-Indices are then ranked according to their performance in the past month. The UBS Life Pilot Index has 60% allocation in rank 1 (the best performing Volatility Targeted Sub-Index), 30% in rank 2 and 10% in rank 3.

The INDEX is calculated and published in USD Dollars.

## 1.2. IDENTIFIERS AND PUBLICATION

The INDEX is published under the following identifiers:

Name	ISIN	Currency	Type	RIC	BBG ticker
UBS Life Pilot Gross Index ER USD	DE000SLA3NQ6	USD	ER*	.UISXLGUE	UISXLGUE Index
UBS Life Pilot Net Index ER USD	DE000SLA3NR4	USD	AR**	.UISXLNUE	UISXLNUE Index

\* ER means that the Index is calculated excess return

\*\*AR means that the Index is calculated adjusted return

The INDEX is published on the website of the INDEX ADMINISTRATOR ([www.solactive.com](http://www.solactive.com)) and is, in addition, available via the price marketing services of Boerse Stuttgart GmbH and may be distributed to all of its affiliated vendors. Each vendor decides on an individual basis as to whether it will distribute or display the INDEX via its information systems.

Any publication in relation to the INDEX (e.g. notices, amendments to the GUIDELINE) will be available at the website of the INDEX ADMINISTRATOR; <https://www.solactive.com/news/announcements/>.

## 1.3. INITIAL LEVEL OF THE INDEX

The initial level of the INDEX on the 19-Jul-2000, the START DATE, is 100. Historical values from the 03-Dec-2018, the LIVE DATE, will be recorded in accordance with Article 8 of the BMR. Levels of the INDEX published for a period prior to the LIVE DATE have been back-tested.



## 1.4. PRICES AND CALCULATION FREQUENCY

The closing level of the INDEX for each CALCULATION DAY is calculated and based on the CLOSING PRICES for the INDEX COMPONENTS on the respective EXCHANGES on which the INDEX COMPONENTS are listed. The CLOSING PRICES of INDEX COMPONENTS not listed in the INDEX CURRENCY are converted using the 4pm London time WM Fixing quoted by Refinitiv. If there is no 4pm London time WM Fixing for the relevant CALCULATION DAY, the last available 4pm London time WM Fixing will be used for the closing level calculation.

The INDEX is calculated every INDEX BUSINESS DAY on a next day basis. In the event that data cannot be provided to Refinitiv or to the pricing services of Boerse Stuttgart GmbH the INDEX cannot be distributed. Any incorrect calculation is adjusted on a retrospective basis.

## 1.5. LICENSING

Licenses to use the INDEX as the underlying value for financial instruments, investment funds and financial contracts may be issued to stock exchanges, banks, financial services providers and investment houses by UBS AG.



## 2. CALCULATION OF THE INDEX

### 2.1. VOLATILITY TARGETED SUB-INDEX CALCULATION

The UBS Life Pilot Net Index ER USD (the "INDEX") is constructed using three Volatility Targeted Sub-Indices, each corresponding to an observation window of 6 months, 9 months and 12 months respectively ( $M=6, 9, 12$ ) (each a "Volatility Targeted Sub-Index"). Each Volatility Targeted Sub-Index calculation consists of three main parts: (1) Underlying Weights Calculation; (2) Sub-Index Calculation and; (3) Volatility Targeted Sub-Index Calculation.

The Volatility Targeted Sub-Indices are reviewed monthly on the WEIGHTS DETERMINATION DATES to determine the Target Units. The allocations in the Underlyings shift gradually and in equal portions over the 5-day REBALANCING PERIOD.

#### 2.1.1. UNDERLYING WEIGHTS CALCULATION

The values of the Underlyings are retrieved from the WEIGHTS DETERMINATION DATE  $M$  rolls ago, i.e.  $WD(i-M)$ , up to the WEIGHTS DETERMINATION DATES  $WD(i)$  (both dates included) for all INDEX BUSINESS DAYS. If the value of an Underlying is not available on a given INDEX BUSINESS DAY, the last available value is rolled forward (if the Underlying has no values before the given INDEX BUSINESS DAY, the value is assumed to be missing).

Only Underlyings that have no missing values on all INDEX BUSINESS DAYS between the WEIGHT DETERMINATION DATE  $M$  rolls ago,  $WD(i-M)$ , and the most recent WEIGHT DETERMINATION DATE,  $WD(i)$ , are kept.

The 5-day rolling average of the Underlying values for both calendar days on  $t=i$  and  $t=i-M$  is calculated as:

$$Value_t^{k, avg} = \frac{1}{5} \sum_{j=-4}^0 Value_{t+j}^k$$

where

$Value_t^k$  denotes the value of Underlying  $k$  on INDEX BUSINESS DATE  $t$ .

For each Underlying, a trend signal calculated as below:

The daily log-returns of the Underlying values for all INDEX BUSINESS DAYS from but excluding  $t=i-M$  to and including  $t=i$  (the "Period") are calculated as



$$r_t^k = \ln\left(\frac{Value_t^k}{Value_{t-1}^k}\right)$$

The t-statistic is calculated as follows.

$$t-stat^k = \frac{\ln\left(\frac{Value_i^{k, avg}}{Value_{i-M}^{k, avg}}\right)}{(\text{Standard Dev of } r_t^k) * \text{sqrt}(\# \text{ Index Business days in the Period})}$$

Where Standard Dev of  $r_t^k$  means the sample standard deviation of daily returns calculated over the Period

The t-stat is then capped to 2 (in absolute value) and rounded to 4 decimal places, i.e.

$$t-stat^k = \text{round}(\text{sign}(t-stat^k) * \text{Min}(2, \text{abs}(t-stat^k)), 4)$$

Where round(,4) uses the round-off mechanism to round the number to 4<sup>th</sup> decimal place, i.e., round up if digit at 5<sup>th</sup> decimal place is higher than or equal to 5 and round down if digit at 5<sup>th</sup> decimal place is lower than 5.

Finally, the  $t-stat^k$  for each Underlying  $k$  is scaled down as  $t-stat^{k, adjusted} = \frac{t-stat^k}{N_a}$  where  $N_a$  is the number of Underlyings in the same asset class as  $k$ .

The Target Weights ( $w_{WD(i)}^k$ ) for the Underlyings are then determined by "risk contribution" portfolio optimization by taking into account the covariance matrix, the trend signal and a predefined target volatility of 5%. Specifically, the problem to solve is to

$$\max_{w_{WD(i)}^k} \sum_{k=1}^{N_{WD(i)}} |t-stat^{k, adjusted}| \cdot f(w_{WD(i)}^k)$$

Subject to:

$$\sqrt{(w_{WD(i)})^{Transpose} \cdot \Sigma_{WD(i)} \cdot w_{WD(i)}} \leq \sigma_{TGT}$$





$$\text{If } t\text{-stat}^{k,adjusted} > 0: \quad \max(0, w_{WD(i-1)}^k - TOCap^k) < w_{WD(i)}^k \leq \min(\text{WeightCap}^k, w_{WD(i-1)}^k + TOCap^k)$$

$$\text{if } t\text{-stat}^{k,adjusted} \leq 0 \text{ and } w_{WD(i-1)}^k - TOCap^k > 0: \quad w_{WD(i)}^k = w_{WD(i-1)}^k - TOCap^k$$

$$\text{if } t\text{-stat}^{k,adjusted} \leq 0 \text{ and } w_{WD(i-1)}^k - TOCap^k \leq 0: \quad w_{WD(i)}^k = 0$$

where:

$f(w_{WD(i)}^k)$  is the function of  $w_{WD(i)}^k$  and is calculated as follows:

$$f(w_{WD(i)}^k) = \begin{cases} 0, & \text{if } t\text{-stat}^{k,adjusted} \leq 0 \text{ and } w_{WD(i-1)}^k - TOCap^k \leq 0 \\ \ln(w_{WD(i)}^k), & \text{otherwise} \end{cases}$$

$N_{WD(i)}$  is the number of all available Underlyings on the WEIGHT DETERMINATION DATE  $WD(i)$

$\sigma_{TGT}$  is the target volatility (5% in this case)

$w_{WD(i)}^k$  is the Target Weight of Underlying  $k$  on the WEIGHT DETERMINATION DATE  $WD(i)$

$w_{WD(i-1)}^k$  is the Target Weight of Underlying  $k$  on the immediately preceding WEIGHT DETERMINATION DATE in respect of  $WD(i)$ . To avoid any confusion, if  $WD(i)$  is the first WEIGHT DETERMINATION DATE of the Sub-Index,  $w_{WD(i-1)}^k = 0$

$w_{WD(i)}$  means a  $N_{WD(i)} \times 1$  vector of  $N_{WD(i)}$  elements whose  $k^{\text{th}}$  element is the Target Weight  $w_{WD(i)}^k$  in respect of Underlying  $k$ ;

$\text{WeightCap}^k$  is the weight cap of Underlying  $k$ , which as shown in 2.3

$TOCap^k$  is the turnover cap of Underlying  $k$ . If  $WD(i)$  is the WEIGHT DETERMINATION DATE of the Sub-Index,  $TOCap^k = \text{WeightCap}^k$ . Otherwise,  $TOCap^k$  is available in 2.3

$\Sigma_{WD(i)}$  is the covariance matrix of all available Underlyings on the WEIGHT DETERMINATION DATE  $WD(i)$ .

The covariance matrix is calculated as follows:

Consider the values of all available Underlyings on an INDEX BUSINESS DAY, from and including  $WD(i-M)$ , the WEIGHTS DETERMINATION DATES  $M$  rolls ago, to and including the WEIGHTS DETERMINATION DATES  $WD(i)$ . The number of dates in that interval is denoted as  $L$  (typically around  $252/12 \times M$ ).

Calculate then the 5-day log-returns crossed in USD, i.e.



$$r_t^{k,USD,5D} = \ln \left( \frac{\text{Value}_t^k}{\text{Value}_{t-5}^k} \right) \times \left( \frac{FX_t^k}{FX_{t-5}^k} \right)^{\text{Lambda}^k},$$

where  $FX_t^k$  denotes the exchange rate of the currency of Underlying  $k$  against USD in market convention order. FX fixings refer to WMCO 4pm London fixings and the Bloomberg tickers for FX are available in 2.3  $\text{Lambda}^k$  is the convert factor of the FX of Underlying  $k$ , which is available in 2.3

The returns are centered:

$$r_{-c_t}^k = r_t^{k,USD,5D} - \text{Average}(r_t^{k,USD,5D})$$

$$\text{Average}(r_t^{k,USD,5D}) = \sum_{s=1}^{L-5} r_{t-s+1}^{k,USD,5D}$$

Construct an  $(L-5) \times N_t$  matrix  $R_t$  of the centered log-returns (i.e. the element on row  $m$  and column  $k$  is  $r_{-c_{t-m+1}}^k$ ,  $1 \leq m \leq L-5$ ). The covariance matrix is then estimated as

$$\Sigma_t = \left( \frac{R_t^T R_t}{L-6} \right) * \gamma * \frac{252}{5}$$

$R_t^T$  denotes the transpose of the matrix  $R_t$ . The scaling factor is set to  $L-6$  (rather than  $L-5$ ) so that the estimate would be unbiased. The factor  $\gamma$  is set to 1.44 (and is included to account for the volatility of volatility)

where  $t \geq 2L-7$

In respect of a WEIGHTS DETERMINATION DATES  $WD(i)$  and Underlying  $k$ , the Target Units are determined according to the formula below:

$$TU_{WD(i)}^k = \text{Round} \left( \frac{I_{WD(i)} \times w_{adj}_{WD(i)}^k}{\text{Value}_{WD(i)}^k \times (FX_{WD(i)}^k)^{\text{Lambda}^k}}, 5 \right)$$

where,

- $I_{WD(i)}$  means the Sub-Index value on WEIGHTS DETERMINATION DATE  $WD(i)$ ;
- $\text{Value}_{WD(i)}^k$  denotes the value of Underlying  $k$  on WEIGHTS DETERMINATION DATE  $WD(i)$ ;
- $w_{adj}_{WD(i)}^k$  means, the value of Adjusted Target Weights of Underlying  $k$  determined on WEIGHTS DETERMINATION DATE  $WD(i)$ ;
- $FX_{WD(i)}^k$  means, in respect of Underlying  $k$  and WEIGHTS DETERMINATION DATE  $WD(i)$ , the Spot Exchange Rate in respect of the Underlying Currency as observed on such WEIGHTS



DETERMINATION DATE and if such Spot Exchange Rate is unavailable, then  $FX_{WD(i)}^k$  shall be the last available Spot Exchange Rate as of such INDEX BUSINESS DAY.

$Round(.5)$  uses the round-off mechanism to round the number to 5<sup>th</sup> decimal place, i.e., round up if digit at 6<sup>th</sup> decimal place is higher than or equal to 5 and round down if digit at 6<sup>th</sup> decimal place is lower than 5.

## 2.1.2. SUB-INDEX CALCULATION

### 2.1.2.1. ACTUAL NUMBER OF UNITS CALCULATION

In respect of each INDEX BUSINESS DAY  $t$  that is not a REBALANCING DATE, the Actual Number of Unit  $AU_t^k$  in respect of Underlying  $k$  shall be calculated as:

$$AU_t^k = AU_{t-1}^k$$

where,

$AU_{t-1}^k$  means the Actual Number of Unit in respect of Underlying  $k$  on immediately preceding INDEX BUSINESS DAY  $t - 1$  unless such day  $t - 1$  occurs prior to the SUB-INDEX BASE DATE, in which case,  $AU_{t-1}^k$  shall be equal to zero.

Otherwise, on each INDEX BUSINESS DAY that is a REBALANCING DATE  $R$ , the Actual Number of Unit  $AU_R^k$  of the Underlying  $k$  on such REBALANCING DATE is calculated as follows:

$$AU_R^k = AU_{R-1}^k + DU_R^k$$

where,

$AU_{R-1}^k$  means, in respect of REBALANCING DATE  $R$  and Underlying  $k$ , the Actual Number of Units in respect of the immediately preceding REBALANCING DATE  $-1$  unless such REBALANCING DATE  $R$  is the REBALANCE COMMENCEMENT DATE in respect of the WEIGHTS DETERMINATION DATE  $WD$ , in which case,  $AU_{R-1}^k$  shall be equal to  $TU_{WD-1}^k$ . For the avoidance of doubt, if such WEIGHTS DETERMINATION DATE  $WD$  occurs on or prior to the SUB-INDEX BASE DATE, then  $AU_{R-1}^k = 0$ ;

$DU_R^k$  means, in respect of REBALANCING DATE and Underlying  $k$  the amount by which the Actual Number of Units change from the previous REBALANCING DATE during the REBALANCING PERIOD and is determined as follows:



$$DU_R^k = (TU_{WD}^k - AU_{R-1}^k) \times \frac{1}{n_R}$$

where,

$n_R$  means, in respect of REBALANCING DATE  $R$ , the number of REBALANCING DATES remaining in the REBALANCING PERIOD.

$$n_R^k = \begin{cases} 5, & \text{if } R \text{ is the Rebalance Commencement Date} \\ \max(1, n_{R-1} - 1), & \text{otherwise} \end{cases}$$

$AU_{R-1}^k$  means, in respect of REBALANCING DATE  $R$ , the Actual Number of Units in respect of Underlying  $k$  on immediately preceding REBALANCING DATE  $R-1$  unless such Rebalancing Date occurs on the SUB-INDEX BASE DATE, in which case,  $AU_{t-1}^k$  shall be equal to zero;

$TU_{WD}^k$  means the Target Unit in respect of Underlying  $k$  on WEIGHTS DETERMINATION DATE  $WD$  which is immediately preceding such REBALANCING DATE  $R$ .

Notwithstanding the above, if in respect of any REBALANCE COMMENCING DATE, the INDEX ADMINISTRATOR determines that an Underlying is affected by a Market Disruption Event, then such Underlying may not be rebalanced on such REBALANCING DATE and  $DU_R^k$  shall be set to zero.

## 2.1.2.2. SUB-INDEX VALUE CALCULATION

In respect of the SUB-INDEX BASE DATE, the Sub-Index Value shall be 100.

Subsequently, in respect of each INDEX BUSINESS DAY  $t$ , the Sub-Index Value is calculated in accordance with the following formula:

$$\begin{aligned} I_t &= I_R + \sum_{k=1}^{N_D} AU_R^k \times (Value_t^k - Value_R^k) \times (FX_t^k)^{\lambda^k} \\ &\quad - \sum_{k=1}^{N_D} \text{abs}(AU_t^k - AU_R^k) \times Value_t^k \times (FX_t^k)^{\lambda^k} \times \text{Rebalance Charge}^k \\ &\quad - \sum_{k=1}^{N_D} \text{abs}(AU_R^k) \times \frac{\text{Days}(R, t)}{365} \times Value_R^k \times (FX_t^k)^{\lambda^k} \times \text{Carry Charge}^k \end{aligned}$$



where,

$Days(R, t)$	means the number of calendar days from and including the immediately preceding REBALANCING DATE $R$ to but excluding INDEX BUSINESS DAY $t$ ;
$N_D$	means the number of all available Underlyings
$I_R$	means, in respect of INDEX BUSINESS DAY $t$ , the Sub-Index Value on the immediately preceding REBALANCING DATE $R$ ;
$I_t$	means the Sub-Index Value on INDEX BUSINESS DAY $t$ ;
$Value_R^k$	means the value of the Underlying in respect of Underlying $k$ on the immediately preceding REBALANCING DATE $R$ ;
$Value_t^k$	means the value of the Underlying in respect of Underlying $k$ on INDEX BUSINESS DAY $t$ and if such value of the Underlying is unavailable, then $Value_t^k$ shall be the last available value of the Underlying as of such INDEX BUSINESS DAY;
$FX_t^k$	means, in respect of INDEX BUSINESS DAY $t$ and Underlying $k$ , the Spot Exchange Rate in respect of the Underlying Currency as observed on such INDEX BUSINESS DAY and if such Spot Exchange Rate is unavailable, then $FX_t^k$ shall be the last available Spot Exchange Rate as of such INDEX BUSINESS DAY;
$AU_t^k$	means the Actual Number of Units in respect of Underlying $k$ on INDEX BUSINESS DAY $t$ ;
$AU_R^k$	means the Actual Number of Units in respect of Underlying $k$ on the immediately preceding REBALANCING DATE $R$ ;
$Carry Charge^k$ and $Rebalance Charge^k$	mean, in respect of Underlying $k$ , the costs as specified in 2.3.

## 2.1.3. VOLATILITY TARGETED SUB-INDEX CALCULATION

### 2.1.3.1. VOLATILITY TARGET REBALANCING DATE

The first Volatility Target REBALANCING DATE shall be the Vol Target Base Date.

Subsequently, on each INDEX BUSINESS DAY  $t$  that is also a Common Business Day, if any of the below criteria is met, then such day  $t$  shall be deemed to be a Volatility Target REBALANCING DATE:

- (i)  $Actual Weight_{RVT} \times Realized Volatility_{t-2} > 6\%$
- (ii)  $Actual Weight_{RVT} \times Realized Volatility_{t-2} < 4\%$  and  $Actual Weight_{RVT} < 150\%$

where,

$Actual Weight_t$	means, in respect of any INDEX BUSINESS DAY $t$ , a value calculated in a manner described below:
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- (i) if such INDEX BUSINESS DAY  $t$  is deemed to be a Volatility Target REBALANCING DATE, then

$$Actual\ Weight_t = \min\left(150\%, \frac{\text{Target Volatility}}{Realized\ Volatility_{t-2}}\right);$$

- (ii) otherwise,  $Actual\ Weight_t = Actual\ Weight_{t-1}$ ;

**Realized Volatility<sub>t</sub>** means, in respect of any INDEX BUSINESS DAY  $t$ , the realized volatility of the relevant Sub-Index and is calculated as:

$$Realized\ Volatility_t = \sqrt{52} \times \sqrt{\frac{\sum_{j=1}^{VOP} \left( \left(1 - \frac{3}{VOP}\right)^j \times \left(\frac{I_{t-j+1}}{I_{t-j-4}} - 1\right)^2 \right)}{\sum_{j=1}^{VOP} \left(1 - \frac{3}{VOP}\right)^j}};$$

$R_{VT}$  means, in respect of INDEX BUSINESS DAY  $t$ , the immediately preceding Volatility Target REBALANCING DATE;

$t - 1$  means, in respect of any INDEX BUSINESS DAY  $t$ , the INDEX BUSINESS DAY that is immediately preceding such INDEX BUSINESS DAY  $t$ ;

$t - 2$  means, in respect of any INDEX BUSINESS DAY  $t$ , the INDEX BUSINESS DAY that is two INDEX BUSINESS DAYS immediately preceding such INDEX BUSINESS DAY  $t$ ; and

**VOP** means the length of the observation period used for calculating realized volatility and is equal to 63.

### 2.1.3.2. VOLATILITY TARGETED SUB-INDEX

On the Vol-Target Base Date, the Volatility Targeted Sub-Index value  $VT_t^{ER}$  is equal to 100.

Subsequently, in respect of each INDEX BUSINESS DAY  $t$  following the Vol-Target Base Date, the Volatility Targeted Sub-Index value is determined in accordance with the formula below:

$$VT_t^{ER} = VT_{t-1}^{ER} + UU_{t-1} \times (I_t - I_{t-1})$$

where,

$VT_t^{ER}$  means, in respect of INDEX BUSINESS DAY  $t$ , the Volatility Targeted Sub-Index value;

$VT_{t-1}^{ER}$  means the Volatility Targeted Sub-Index value on the immediately preceding INDEX BUSINESS DAY  $t-1$ ; Notwithstanding the above, if such  $t - 1$  occur prior to the Vol-Target Base Date, then the Sub-Index values  $VT_{t-1}^{ER}$  shall be equal to 100;



$UU_t$  means, in respect of INDEX BUSINESS DAY  $t$ ;

If INDEX BUSINESS DAY  $t$  is a Volatility Target REBALANCING DATE

$$UU_t = \text{Actual Weight}_t \times \frac{VT_{t-2}^{ER}}{I_{t-2}}$$

Otherwise

$$UU_t = UU_{t-1}$$

$VT_{t-2}^{ER}$  means the Volatility Targeted Sub-Index value on the INDEX BUSINESS DAY that is two INDEX BUSINESS DAYS preceding  $t$ ; Notwithstanding the above, if such  $t - 2$  occur prior to the Vol-Target Base Date, then the Sub-Index values  $VT_{t-2}^{ER}$  shall be equal to 100;

$I_t$  means, in respect of INDEX BUSINESS DAY  $t$ , the Sub-Index value; and

$I_{t-1}$  means, in respect of INDEX BUSINESS DAY  $t$ , the Sub-Index value on the immediately preceding INDEX BUSINESS DAY ' $t - 1$ '

## 2.2. INDEX CALCULATION

The Index is a combination of the three Volatility Targeted Sub-Indices (M=6, 9 and 12).

### 2.2.1. TARGET WEIGHTS CALCULATION

The return of Volatility Targeted Sub-Index  $i$  is calculated as below on each WEIGHTS DETERMINATION DATE:

$$r_{WD}^i = \frac{VT_{WD}^i}{VT_{WD-ObsW}^i} - 1$$

where

$ObsW$  is 1 month.  $WD - ObsW$  is the WEIGHTS DETERMINATION DATE immediately preceding WEIGHTS DETERMINATION DATE  $WD$ .

$VT_{WD}^i$  means the level of Volatility Targeted Sub-Index  $i$  on the WEIGHTS DETERMINATION DATE  $WD$

On each WEIGHTS DETERMINATION DATE, rank the return  $r_{WD}^i$  of three Volatility Targeted Sub-Indices in descending order. Rank 1 is the Sub-Index that has the highest return. Rank 2 is the Sub-Index that has the second highest return. Rank 3 is the Sub-Index that has the lowest return.



Target weight is given as below:

$T\_weight_{WD}^i$	Rank 1	60.00%
	Rank 2	30.00%
	Rank 3	10.00%

## 2.2.2. TARGET UNITS CALCULATION

In respect of a WEIGHTS DETERMINATION DATE  $WD$  and Volatility Targeted Sub-Index  $i$ , the Target Units are determined according to the formula below:

$$T\_unit_{WD}^i = Round\left(\frac{Index_{WD} \times T\_weight_{WD}^i}{VT_{WD}^i}, 3\right)$$

where,

$Index_{WD}$  means the Index Value on WEIGHTS DETERMINATION DATE  $WD$ ;

$T\_weight_{WD}^i$  means the Target Weight of Volatility Targeted Sub-Index  $i$  on the WEIGHTS DETERMINATION DATE  $WD$ ;

$VT_{WD}^i$  means the level of Volatility Targeted Sub-Index  $i$  on the WEIGHTS DETERMINATION DATE  $WD$ ; and

$Round(i,3)$  uses the round-off mechanism to round the number to 3<sup>rd</sup> decimal place, i.e., round up if digit at 4<sup>th</sup> decimal place is higher than or equal to 5 and round down if digit at 4<sup>th</sup> decimal place is lower than 5.

## 2.2.3. ACTUAL UNITS CALCULATION

The REBALANCING PERIOD is the same as for the Sub-Indices.

In respect of each INDEX BUSINESS DAY  $t$  that is not a REBALANCING DATE, the Actual Units  $A\_unit_t^i$  in respect of Volatility Targeted Sub-Index  $i$  shall be calculated as:

$$A\_unit_t^i = A\_unit_{t-1}^i$$

where,

$A\_unit_{t-1}^i$  means the Actual unit in respect of Volatility Targeted Sub-Index  $i$  on immediately preceding INDEX BUSINESS DAY  $t - 1$ .





Otherwise, in respect of a WEIGHT DETERMINATION DATE  $WD$ , on each REBALANCING DATE  $R$  during a REBALANCING PERIOD in respect of such Weight Determination, the Actual Units  $A\_unit_R^i$  of the Volatility Targeted Sub-Index  $i$  on such REBALANCING DATE is calculated as follows:

$$A\_unit_R^i = A\_unit_{R-1}^i + D\_unit_R^i$$

where,

$A\_unit_{R-1}^i$  means, in respect of REBALANCING DATE  $R$  and Sub-Index  $i$ , the Actual Units in respect of the immediately preceding REBALANCING DATE  $R - 1$  unless such REBALANCING DATE  $R$  is the REBALANCE COMMENCING DATE in respect of the WEIGHTS DETERMINATION DATE  $WD$ , in which case,  $A\_unit_{R-1}^i$  shall be equal to  $T\_unit_{WD-1}^i$ . For the avoidance of doubt, if such WEIGHTS DETERMINATION DATE  $WD$  occurs on or prior to the Index Base Date, then  $A\_unit_{R-1}^i = 0$ ;

$D\_unit_R^i$  means, in respect of REBALANCING DATE  $R$  and Sub-Index  $i$  the amount by which the Actual Units change from the previous REBALANCING DATE during the REBALANCING PERIOD and is determined as follows:

$$D\_unit_R^i = (T\_unit_{WD}^i - A\_unit_{t-1}^i) \times \frac{1}{n_R}$$

where,

$n_R$  means, in respect of REBALANCING DATE  $R$ , the number of REBALANCING DATES remaining in the REBALANCING PERIOD.

$$n_R = \begin{cases} 5, & \text{if } R \text{ is the Rebalance Commencement Date} \\ \max(1, n_{R-1} - 1), & \text{otherwise} \end{cases}$$

$A\_unit_{t-1}^i$  means, in respect of REBALANCING DATE  $R$ , the Actual Units in respect of Volatility Targeted Sub-Index  $i$  on immediately preceding INDEX BUSINESS DAY;

$T\_unit_{WD}^i$  means the Target Units in respect of Volatility Targeted Sub-Index  $i$  on WEIGHTS DETERMINATION DATE  $WD$ .

## 2.2.4. INDEX VALUE CALCULATION

In respect of the Index Base Date, the Index Value shall be 100.

Subsequently, in respect of each INDEX BUSINESS DAY  $t$ , the Index Value is calculated in accordance with the following formula:



$$Index_t = Index_R + \sum_{i=1}^3 A\_unit_R^i \times (VT_t^i - VT_R^i)$$

where,

$Index_t$  means the Index Value on INDEX BUSINESS DAY  $t$ ;

$Index_R$  means the Index Value on the immediately preceding REBALANCING DATE R;

$VT_t^i$  means the level of Volatility Targeted Sub-Index  $i$  on the INDEX BUSINESS DAY  $t$

$VT_R^i$  means the level of Volatility Targeted Sub-Index  $i$  on the immediately preceding REBALANCING DATE R

## 2.2.5. DRAGGED INDEX VALUE CALCULATION

In respect of the Index Base Date, the Dragged Index Value shall be 100.

Subsequently, in respect of each INDEX BUSINESS DAY  $t$ , the Dragged Index Value is calculated in accordance with the following formula:

$$DIndex_t = DIndex_{t-1} \times \left( \frac{Index_t}{Index_{t-1}} - Fee \times \frac{Act(t-1, t)}{365} \right)$$

where,

$DIndex_{t-1}$  means the Dragged Index Value on INDEX BUSINESS DAY  $t - 1$ ;

$Act(t - 1, t)$  means the number of calendar days from but excluding  $t-1$  to and including  $t$ ;

$Fee$  means the management fee charged in the index, which is 0.20%

## 2.3.1 UNIVERSE

3.	Underlying Exposure	Bloomberg Ticker	Reuters RIC	Weight Cap	TO Cap	Carry Cost (in bps)	Rebalancing cost (in bps)	FX Ticker	Lamda
Commodity	BBG Precious Metals	CMPMER Index	.CMPMER	15.00%	15.00%	0	0		0
	BBG Industrial Metals	CMIMER Index	.CMIMER	15.00%	15.00%	0	0		0



	BBG Energy	CMENER Index	.CMENER	15.00%	15.00%	0	0		0
Bonds	10Yr T-Notes	MLTAU10E Index	ULTAU10E=UBSL	50.00%	50.00%	0	0		0
	Euro-Bund	UISRMD1E Index	.UISRMD1E	50.00%	50.00%	0	0	EURUSD WMCO Curncy	1
	JGB	UISRMJ1E Index	.UISRMJ1E	150.00%	50.00%	0	0	USDJPY WMCO Curncy	-1
	10Yr UK	UISRML1E Index	.UISRML1E	50.00%	30.00%	0	0	GBPUSD WMCO Curncy	1
Equity	S&P500	UISEMULE Index	.UISEMULE	15.00%	15.00%	0	0		0
	Dax	UISEMDLE Index	.UISEMDLE	15.00%	15.00%	0	0	EURUSD WMCO Curncy	1
	FTSE 100	UISEMLLE Index	.UISEMLLE	15.00%	10.00%	0	0	GBPUSD WMCO Curncy	1
	Nikkei 225	UISEMJLE Index	.UISEMJLE	15.00%	10.00%	0	0	USDJPY WMCO Curncy	-1
	Russell 2000	UISEMURE Index	Not Available	15.00%	10.00%	0	0		0
	NASDAQ	UISEMUNE Index	Not Available	15.00%	10.00%	0	0		0



### 2.3.2 ACCURACY

The level of the INDEX will be rounded to two decimal places.

### 2.3.3 RECALCULATION

SOLACTIVE makes the greatest possible efforts to accurately calculate and maintain its indices. However, errors in the determination process may occur from time to time for variety reasons (internal or external) and therefore, cannot be completely ruled out. SOLACTIVE endeavors to correct all errors that have been identified within a reasonable period of time. The understanding of "a reasonable period of time" as well as the general measures to be taken are generally depending on the underlying and is specified in the Solactive Correction Policy, which is incorporated by reference and available on the SOLACTIVE website: <https://www.solactive.com/documents/correction-policy/>.

### 2.3.4 MARKET DISRUPTION

In periods of market stress SOLACTIVE calculates its indices following predefined and exhaustive arrangements as described in the Solactive Disruption Policy, which is incorporated by reference and available on the SOLACTIVE website: <https://www.solactive.com/documents/disruption-policy/>. Such market stress can arise due to a variety of reasons, but generally results in inaccurate or delayed prices for one or more INDEX COMPONENTS. The determination of the INDEX may be limited or impaired at times of illiquid or fragmented markets and market stress.



## 3 MISCELLANEOUS

### 3.1 DISCRETION

Any discretion which may need to be exercised in relation to the determination of the INDEX (for example the determination of the INDEX UNIVERSE (if applicable), the selection of the INDEX COMPONENTS (if applicable) or any other relevant decisions in relation to the INDEX) shall be made in accordance with strict rules regarding the exercise of discretion or expert judgement.

### 3.2 METHODOLOGY REVIEW

The methodology of the INDEX is subject to regular review, at least annually. In case a need of a change of the methodology has been identified within such review (e.g. if the underlying market or economic reality has changed since the launch of the INDEX, i.e. if the present methodology is based on obsolete assumptions and factors and no longer reflects the reality as accurately, reliably and appropriately as before), such change will be made in accordance with the Solactive Methodology Policy, which is incorporated by reference and available on the SOLACTIVE website: <https://www.solactive.com/documents/methodology-policy/>.

Such change in the methodology will be announced on the SOLACTIVE website under the Section "[Announcement](https://www.solactive.com/news/announcements/)", which is available at <https://www.solactive.com/news/announcements/>. The date of the last amendment of this INDEX is contained in this GUIDELINE.

### 3.3 CHANGES IN CALCULATION METHOD

The application by the INDEX ADMINISTRATOR of the method described in this document is final and binding. The INDEX ADMINISTRATOR shall apply the method described above for the composition and calculation of the INDEX. However, it cannot be excluded that the market environment, supervisory, legal and financial or tax reasons may require changes to be made to this method. The INDEX ADMINISTRATOR may also make changes to the terms and conditions of the INDEX and the method applied to calculate the INDEX that it deems to be necessary and desirable in order to prevent obvious or demonstrable error or to remedy, correct or supplement incorrect terms and conditions. The INDEX ADMINISTRATOR is not obliged to provide information on any such modifications or changes. Despite the modifications and changes, the INDEX ADMINISTRATOR will take the appropriate steps to ensure a calculation method is applied that is consistent with the method described above.



## 3.4 TERMINATION

SOLACTIVE makes the greatest possible efforts to ensure the resilience and continued integrity of its indices over time. Where necessary, SOLACTIVE follows a clearly defined and transparent procedure to adapt Index methodologies to changing underlying markets (see Section 5.2 "Methodology Review") in order to maintain continued reliability and comparability of the indices. Nevertheless, if no other options are available the orderly cessation of the INDEX may be indicated. This is usually the case when the underlying market or economic reality, which an index is set to measure or to reflect, changes substantially and in a way not foreseeable at the time of inception of the index, the index rules, and particularly the selection criteria, can no longer be applied coherently or the index is no longer used as the underlying value for financial instruments, investment funds and financial contracts.

SOLACTIVE has established and maintains clear guidelines on how to identify situations in which the cessation of an index is unavoidable, how stakeholders are to be informed and consulted and the procedures to be followed for a termination or the transition to an alternative index. Details are specified in the Solactive Termination Policy, which is incorporated by reference and available on the SOLACTIVE website: <https://www.solactive.com/documents/termination-policy/>.

## 3.5 OVERSIGHT

An oversight committee composed of staff from SOLACTIVE and its subsidiaries (the "OVERSIGHT COMMITTEE") is responsible for decisions regarding any amendments to the rules of the INDEX. Any such amendment, which may result in an amendment of the GUIDELINE, must be submitted to the OVERSIGHT COMMITTEE for prior approval and will be made in compliance with the Methodology Policy, which is available on the SOLACTIVE website: <https://www.solactive.com/documents/methodology-policy/>.



## 4 DEFINITIONS

"**BENCHMARK REGULATION**" shall have the meaning as defined in Section "Introduction".

"**BMR**" shall have the meaning as defined in Section "Introduction".

"**BUSINESS DAY**" is a common day of London Bank Business Day, New York Bank Business Day and EUREX Exchange Business Day.

"**CALCULATION DAY**" is the day where each Underlying in the Universe is calculated and published according to their respective guidelines.

"**CLOSE OF BUSINESS**" is the calculation time of the closing level of the INDEX as outlined in Section 1.4.

The "**CLOSING PRICE**" in respect of an INDEX COMPONENT and a TRADING DAY is a security's final regular-hours TRADING PRICE published by the EXCHANGE and determined in accordance with the EXCHANGE regulations. If the EXCHANGE has no or has not published a CLOSING PRICE in accordance with the EXCHANGE rules for an INDEX COMPONENT, the last TRADING PRICE will be used.

"**GUIDELINE**" shall have the meaning as defined in Section "Introduction".

"**INDEX**" shall have the meaning as defined in Section "Introduction".

"**INDEX ADMINISTRATOR**" shall have the meaning as defined in Section "Introduction".

"**INDEX CURRENCY**" is the currency specified in the column "Currency" in the table in Section 1.2.

"**LIVE DATE**" shall have the meaning as defined in Section 1.3.

"**OVERSIGHT COMMITTEE**" shall have the meaning as defined in Section 5.5.

"**REBALANCE COMMENCEMENT DATE**" is the first day in the **REBALANCING PERIOD**.

"**REBALANCING DATE**" is a day that falls into the **REBALANCING PERIOD**.

"**REBALANCING PERIOD**" comprises 5 consecutive Common Business Days with the first day in the Rebalancing Period being the first Common Business Day that is at least 2 **INDEX BUSINESS DAYS** after the corresponding **WEIGHT DETERMINATION DATE**.

"**SOLACTIVE**" shall have the meaning as defined in Section "Introduction".

"**START DATE**" shall have the meaning as defined in Section 1.3.

"**SUB-INDEX BASE DATE**" is 20-Jan-2000

"**TRADING DAY**" is with respect to an INDEX COMPONENT included in the INDEX at the REBALANCE DATE and every INDEX COMPONENT included in the INDEX at the CALCULATION DAY immediately following the REBALANCE DATE (for clarification: this provision is intended to capture the TRADING DAYS for the securities to be included in the INDEX as new INDEX COMPONENTS with close of trading on the relevant EXCHANGE on the REBALANCE DATE) a day on which the relevant EXCHANGE is open for trading (or a day that would have been such a day if a market disruption had not occurred), excluding days on which trading may be ceased prior to the scheduled



EXCHANGE closing time and days on which the EXCHANGE is open for a scheduled shortened period. The INDEX ADMINISTRATOR is ultimately responsible as to whether a certain day is a TRADING DAY.

The "**TRADING PRICE**" in respect of an INDEX COMPONENT and a TRADING DAY is the most recent published price at which the INDEX COMPONENT was traded on the respective EXCHANGE.

"**WEIGHT DETERMINATION DATE**" is the 10<sup>th</sup> INDEX BUSINESS DAY of the month.



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