

INDEX GUIDELINE

EURO EQUITY DEFENSIVE PUT WRITE INDEX

Version 1.0

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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 Euro Equity Defensive Put Write Index (the "INDEX"). Any amendments to the rules made to the GUIDELINE are approved by the OVERSIGHT COMMITTEE specified in Section 3.5. The INDEX is owned by UBS and it gets 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 4 (Definitions) or in the below section 1.2.

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 Euro Equity Defensive Put Write Index (the INDEX) reflects the performance of the INDEX PORTFOLIO described in the set of rules below. The Euro Equity Defensive Put Write index is designed to reflect the performance of a notional put option writing strategy, which consists of selling listed index put options on the Euro Stoxx 50 Index and a notional cash exposure linked to a three-month German Bubil rate.

The INDEX is calculated and published in EUR.

1.2. IDENTIFIERS AND PUBLICATION

The INDEX is published under the following identifiers:

Table 1: Index Details

Name	ISIN	Currency	BBG ticker
Euro Equity Defensive Put Write Index	DE000SLOAS77	EUR	UISEEUPU Index

Table 2: Portfolio Details

Term	Definition
Option Portfolio Currency	EUR
Fee	0.27% p.a. x Leverage Factor
Index Portfolio Commencement Date	Jan 18 th 2019
Leverage Factor	1
Initial Value of Cash Position	100.775338675947
Scheduled Trading Day	Any day on which each of the EXCHANGE corresponding to each INDEX PORTFOLIO CONSTITUENT is scheduled to be open for trading for their respective regular trading session (including a half-day or a day on which trading on any such EXCHANGE is scheduled to close prior to its regular closing time)
Index Portfolio Business Day	Any day that is a SCHEDULED TRADING DAY



Options Adjustment Day	Friday each week AND which is also a LONDON BUSINESS DAY or, if such day is not an INDEX PORTFOLIO BUSINESS DAY, then the immediately preceding INDEX PORTFOLIO BUSINESS DAY AND which is also a LONDON BUSINESS DAY
Calendar Day Count Convention	365
Scheduled Trading Day Count Convention	252
Risk Free Rate	Solactive 3 Month German Government Bill Yield Index (BBG: SOL3GGY Index)*

* If (i) the rate is no longer displayed or is discontinued permanently without an official legal successor rate or (ii) the administrator of the relevant rate fails to obtain or maintain any necessary approvals or registrations, the Issuer is entitled to replace the rate by another rate, representing, at the reasonable discretion of the INDEX ADMINISTRATOR, an economically comparable concept, (the "Successor Rate"). The Successor Rate and the date it is applied for the first time shall be published without undue delay by way of notification pursuant to the General Terms and Conditions

Table 3: Option Contract Details

Contract Terms	Definition corresponding to Target Option Contract
Option Specification	
Currency	Euro (EUR)
Exchange	EUREX
Option Type	Put
Style	European
Option Specification	
Target Maturity Period	Four Weeks
Target Strike	97%
Strike Type	% of TARGET STRIKE REFERENCE INDEX
Allocation	Leverage Factor x (-1/4)
Forward Tolerance	5%
Option Premium Floor	0%
Eligible Universe Details	
Eligible Listed Options Expiration Dates	Friday of each week (if holiday then immediately preceding SCHEDULED TRADING DAY as long as such



	a day falls in the same calendar month. Otherwise, the immediately succeeding SCHEDULED TRADING DAY)
Eligible Listed Options Settlement Time	EDSP Settled
Eligible Listed Options Strike Interval	EUR 25
Cost Details	
Option Cost Floor	0.025%
Vega Ratio Min	0.6
Vega Ratio Scale	0.6
IV Barrier	16%
Data Inputs	
Underlying Index	EURO STOXX 50 Index (Bloomberg Ticker: SX5E Index)
Underlying Index Sponsor	STOXX Limited
Underlying Settlement Index	The relevant EDSP (Exchange Delivery Settlement Price) as published by relevant Exchange (BBG: FSX5ES Index)
Target Strike Reference Index	The relevant EDSP (Exchange Delivery Settlement Price) as published by relevant Exchange (BBG: FSX5ES Index)
Option Settlement Price	Has the meaning as defined in section 4
Option Discounting Rate	0%
Box Rate	ICE EUR 1M LIBOR (BBG: EE0001M Index)*

* If (i) the rate is no longer displayed or is discontinued permanently without an official legal successor rate or (ii) the administrator of the relevant rate fails to obtain or maintain any necessary approvals or registrations, the Issuer is entitled to replace the rate by another rate, representing, at the reasonable discretion of the INDEX ADMINISTRATOR, an economically comparable concept, (the "Successor Rate"). The Successor Rate and the date it is applied for the first time shall be published without undue delay by way of notification pursuant to the General Terms and Conditions

The INDEX is published on the website of the INDEX ADMINISTRATOR (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 INDEX START DATE is 100. Historical values from the Index LIVE DATE will be recorded in accordance with Article 8 of the BMR. Levels of the INDEX published for a period prior to the Index LIVE DATE have been back-tested.

1.4. PRICES AND CALCULATION FREQUENCY

The level of the INDEX is calculated for each INDEX PORTFOLIO BUSINESS DAY based on the OPTION SETTLEMENT PRICE of the respective OPTIONS.

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.



2. CALCULATION OF THE INDEX

2.1. GENERIC FUNCTIONS

- $\tau_{a,b}^{STD}$: Function returns the time in years between date 'b' and 'a' using SCHEDULED TRADING DAY convention.

$$\tau_{a,b}^{STD} = \frac{STD(a, b)}{STDCC}$$

- $\tau_{a,b}^{CD}$: Function returns the time in years between date 'b' and 'a' using CALENDAR DAY COUNT CONVENTION.

$$\tau_{a,b}^{CD} = \frac{CD(a, b)}{CDCC}$$

- **STD(a, b)**: Function returns the number of SCHEDULED TRADING DAYS from (but excluding) the date 'b' to (and including) the date "a". This function can return negative value if day 'b' occurs after date 'a'.
- **CD(a, b)**: Function returns the number of CALENDAR DAYS from (but excluding) the date 'b' to (and including) the date "a". This function can return negative value if day 'b' occurs after date 'a'.
- **N(x)**: Function returns the normal cumulative distribution at x.
- **N'(x)**: Function returns the normal probability distribution at x.
- **Nearest(a, b, X)**: This function returns the nearest available strike to 'a' that is a multiple of 'b' within the set of LISTED STRIKES 'X' such that (i) if there are two AVAILABLE STRIKES (which are multiples of 'b') that are equidistant to 'a', the lower strike is selected and (ii) there exists both a listed call option as well as a listed put option corresponding to this strike with a VALID OPTION SETTLEMENT PRICE.
- **Vega (T1, T2, St, Sp, σ, DY, R)**: This function returns the vega (Vega) of an option with pricing date 'T1', OPTION EXPIRY DATE 'T2', OPTION STRIKE 'St', spot 'Sp', implied volatility 'σ', implied dividend yield 'DY' and BOX RATE 'R'.

$$\text{Vega} = Sp \times \exp(-DY \times \tau_{T2, T1}^{CD}) \times N'(d1) \times \sqrt{\tau_{T2, T1}^{STD}}$$

Where:

$$d1 = \frac{1}{\sigma \times \sqrt{\tau_{T2, T1}^{STD}}} \times \left[\ln\left(\frac{F}{St}\right) + \frac{1}{2} \times \sigma^2 \times \tau_{T2, T1}^{STD} \right]; \text{ and}$$

$$F = Sp \times \exp[(R - DY) \times \tau_{T2, T1}^{CD}]$$



- **ImpVol (T1, T2, St, F, R)**: This function returns the implied volatility of an option with pricing date 'T1', OPTION EXPIRY DATE 'T2', OPTION STRIKE 'St', forward 'F' and BOX RATE 'R'.

If $F \leq St$ the reference option ("*Reference Option*") used for optimization has the OPTION TYPE as 'Call'

If $F > St$, the reference option ("*Reference Option*") used for optimization has the OPTION TYPE as 'Put'

Objective function (to be minimized):

$$|BS_{RefOpt} - OptSet_{RefOpt, T1}|$$

The implied volatility is determined by minimizing the above objective function. The result is first rounded to 12 significant figures and then rounded to five decimal places. For avoidance of doubt: an example is 18.123% or 0.18123.

Subject to following constraints:

1. Relative/Absolute accuracy: 1e-11
2. $0.5\% \leq \sigma \leq 500\%$
3. Maximum number of iterations: 150

Where:

If *Reference Option* is a 'Call' option:

$$BS_{RefOpt} = \exp(-R \times \tau_{T2, T1}^{STD}) \times (F \times N(d1) - St \times N(d2));$$

If *Reference Option* is a 'Put' option:

$$BS_{RefOpt} = \exp(-R \times \tau_{T2, T1}^{STD}) \times (St \times N(-d2) - F \times N(-d1));$$

$$d1 = \frac{1}{\sigma \times \sqrt{\tau_{T2, T1}^{STD}}} \left[\ln\left(\frac{F}{St}\right) + \frac{1}{2} \times \sigma^2 \times \tau_{T2, T1}^{STD} \right];$$

$$d2 = d1 - \sigma \times \sqrt{\tau_{T2, T1}^{STD}};$$

" σ " means the current input implied volatility during the optimizing process; and

" $OptSet_{RefOpt, T1}$ " means the OPTION SETTLEMENT PRICE of the *Reference Option* as of day T1, as determined in accordance with the provisions herein.

- **Spread (i, σ , Vega, Sp)**: This function returns the option spread (OPTION SPREAD) of an option 'i' with the corresponding implied volatility being ' σ ', the corresponding Vega being 'Vega' and the spot



being 'Sp'. The OPTION COST FLOOR, VEGA RATIO MIN, VEGA RATIO SCALE and IV BARRIER is as detailed in section 1.2 for the relevant Option Contract "i".

Option Spread

$$= Sp \times \left[\max \left(\text{Option Cost Floor}_i, \max \left(\text{Vega Ratio Min}_i, \text{Vega Ratio Scale}_i \times \frac{\sigma}{\text{IV Barrier}_i} \right) \times \frac{\text{Vega}}{100 \times Sp} \right) \right]$$

2.2. INDEX PORTFOLIO LEVEL CALCULATION

2.2.1. INDEX PORTFOLIO LEVEL

On any INDEX PORTFOLIO BUSINESS DAY "t", the INDEX PORTFOLIO LEVEL reflects the sum of (i) the CASH POSITION LEVEL and (ii) the OPTION VALUATION of all INDEX PORTFOLIO CONSTITUENTS "i" that are CURRENT OPTIONS in the portfolio

In respect of each INDEX PORTFOLIO BUSINESS DAY "t" (and subject to the occurrence of an option liquidation event), the INDEX PORTFOLIO LEVEL ("IP_t") will be determined by the INDEX ADMINISTRATOR in accordance with the following formula:

$$IP_t = \text{Cash}_t + \sum_{i \in C_t} [\text{OptUnit}_i \times \text{OptVal}_{i,t}]$$

Where:

"**Cash_t**" means the CASH POSITION LEVEL in respect of INDEX PORTFOLIO BUSINESS DAY "t", as determined in accordance with the provisions herein;

"**C_t**" means the set or universe of INDEX PORTFOLIO CONSTITUENTS "i" that are CURRENT OPTIONS in respect of INDEX PORTFOLIO BUSINESS DAY "t";

"**OptUnit_i**" means the OPTION UNITS of corresponding to INDEX PORTFOLIO CONSTITUENT "i" that is an OPTION CONTRACT, as determined in accordance with the provisions herein;

"**OptVal_{i,t}**" means the OPTION VALUATION of INDEX PORTFOLIO CONSTITUENT "i", that is an OPTION CONTRACT, in respect of INDEX PORTFOLIO BUSINESS DAY "t", as determined in accordance with the provisions herein, provided that where such INDEX PORTFOLIO BUSINESS DAY "t" is a DISRUPTED DAY, then the valuation of such INDEX PORTFOLIO CONSTITUENT "i" shall be determined by the INDEX ADMINISTRATOR in a commercially reasonable manner;



2.2.2. CASH POSITION

The CASH POSITION represents exposure to a notional cash account. The level of the CASH POSITION (the "CASH POSITION LEVEL") in respect of each INDEX PORTFOLIO BUSINESS DAY "t" ("**Cash_t**") will be determined by the INDEX ADMINISTRATOR in accordance with the following formula:

$$\mathbf{Cash}_t = \mathbf{Cash}_{t-1} \times [1 + \mathbf{RFR}_{t-1} \times \tau_{t,t-1}^{CD}] + \mathbf{Cash}_t^{\text{ExpOpt}} + \mathbf{Cash}_t^{\text{NewOpt}} - \mathbf{IP}_{t-1} \times \mathbf{Fee} \times \tau_{t,t-1}^{CD}$$

Where:

"**Cash_{t-1}**" means the CASH POSITION LEVEL in respect of the INDEX PORTFOLIO BUSINESS DAY immediately preceding INDEX PORTFOLIO BUSINESS DAY "t". In respect of the INDEX PORTFOLIO BUSINESS DAY that is the INDEX PORTFOLIO COMMENCEMENT DATE, **Cash_{t-1}** is equal to the INITIAL VALUE OF CASH POSITION stated in section 1.2;

"**RFR_{t-1}**" means the RISK FREE RATE in respect of the INDEX PORTFOLIO BUSINESS DAY immediately preceding INDEX PORTFOLIO BUSINESS DAY "t";

"**Cash_t^{ExpOpt}**" means the cash amount realized by the INDEX PORTFOLIO CONSTITUENTS "i" that are EXPIRING OPTIONS in respect of INDEX PORTFOLIO BUSINESS DAY "t", and will be determined by the INDEX ADMINISTRATOR in accordance with the following formula:

$$\mathbf{Cash}_t^{\text{ExpOpt}} = \sum_{i \in \mathbf{E}_t} [\mathbf{OptUnit}_i \times \mathbf{OptExpVal}_{i,t}]$$

Where:

"**E_t**" means the set or universe of INDEX PORTFOLIO CONSTITUENTS "i" that are EXPIRING OPTIONS with respect to INDEX PORTFOLIO BUSINESS DAY "t";

"**OptExpVal_{i,t}**" means the OPTION EXPIRATION VALUE of INDEX PORTFOLIO CONSTITUENT "i" in respect of INDEX PORTFOLIO BUSINESS DAY "t", as determined in accordance with the provisions herein;

"**Cash_t^{NewOpt}**" means the cash amount realized by the NEW OPTIONS in respect of INDEX PORTFOLIO BUSINESS DAY "t". If INDEX PORTFOLIO BUSINESS DAY "t" is not an OPTIONS ADJUSTMENT DAY or if no INDEX PORTFOLIO CONSTITUENTS that are NEW OPTIONS are being notionally traded in respect of INDEX PORTFOLIO BUSINESS DAY "t" then **Cash_t^{NewOpt}** shall equal zero (0). Otherwise, **Cash_t^{NewOpt}** will be determined by the INDEX ADMINISTRATOR in accordance with the following formula:

$$\mathbf{Cash}_t^{\text{NewOpt}} = - \sum_{i \in \mathbf{N}_t} [\mathbf{OptUnit}_i \times \mathbf{OptVal}_{i,t}] - \sum_{i \in \mathbf{N}_t} \mathbf{abs}[\mathbf{OptUnit}_i \times \mathbf{Spread}_{i,t}]$$

Where:

"**N_t**" means the set or universe of INDEX PORTFOLIO CONSTITUENTS "i" that are NEW OPTIONS in respect of INDEX PORTFOLIO BUSINESS DAY "t";

$$\mathbf{Spread}_{i,t} = \mathbf{Spread}(i, \sigma_{i,t}, v_{i,t}, UI_{i,t})$$

$$\sigma_{i,t} = \mathbf{ImpVol}(t, ED_i, K_i, \mathbf{FwdVal}_{i,t}, BR_{i,t});$$



$$v_{i,t} = \text{Vega}(t, ED_i, K_i, UI_{i,t}, \sigma_{i,t}, BR_{i,t} - \frac{1}{\tau_{ED_i,t}^{CD}} \times \ln \left(\frac{FwdVal_{i,t}}{UI_{i,t}} \right), BR_{i,t});$$

ED_i and K_i represent the OPTION EXPIRY DATE and OPTION STRIKE for the relevant INDEX PORTFOLIO CONSTITUENT "i";

"**FwdVal_{i,t}**" means the FORWARD VALUE corresponding to INDEX PORTFOLIO CONSTITUENT "i" in respect of INDEX PORTFOLIO BUSINESS DAY "t";

"**BR_{i,t}**" means the value of the BOX RATE corresponding to INDEX PORTFOLIO CONSTITUENT "i" in respect of INDEX PORTFOLIO BUSINESS DAY "t";

"**UI_{i,t}**" means the UNDERLYING INDEX LEVEL corresponding to INDEX PORTFOLIO CONSTITUENT "i" in respect of INDEX PORTFOLIO BUSINESS DAY "t".

"**IP_{t-1}**" means the INDEX PORTFOLIO LEVEL in respect of the INDEX PORTFOLIO BUSINESS DAY immediately preceding the INDEX PORTFOLIO BUSINESS DAY "t". In respect of the INDEX PORTFOLIO BUSINESS DAY that is the INDEX PORTFOLIO COMMENCEMENT DATE, **IP_{t-1}** is equal to zero;

"**Fee**" means the FEE detailed in section 1.2.

2.3. ADJUSTMENTS TO OPTION PORTFOLIO

In respect of each INDEX PORTFOLIO BUSINESS DAY "t" that is an OPTIONS ADJUSTMENT DAY; the PORTFOLIO shall acquire exposure to OPTION CONTRACT(S) that will form the INDEX PORTFOLIO CONSTITUENT(S) (corresponding to each TARGET OPTION CONTRACTS). Each if these OPTION CONTRACT(S) to which an exposure is acquired will form the NEW OPTION(S) with respect to such INDEX PORTFOLIO BUSINESS DAY. The methodology to determine the OPTION EXPIRY DATE, OPTION TYPE, OPTION STRIKE, OPTION WEIGHT and OPTION UNITS in respect of such OPTION CONTRACT is provided below. Once an OPTION CONTRACT has been traded on an OPTIONS ADJUSTMENT DAY, the parameters of that OPTION CONTRACT like OPTION EXPIRY DATE, OPTION TYPE, OPTION STRIKE, OPTION WEIGHT and OPTION UNITS remain unchanged through time until the expiry of the relevant option. All options in the portfolio are held until expiry.

2.3.1. OPTION EXPIRY DATE ("**ED_i**")

In respect of each INDEX PORTFOLIO BUSINESS DAY "t" that is an OPTIONS ADJUSTMENT DAY and for each TARGET OPTION CONTRACT, the relevant selected OPTION CONTRACT(S) "i", the NEAR LISTED EXPIRY DATE and the FAR LISTED EXPIRY DATES are determined as:

If the first available LISTED EXPIRY DATE falls on or after the relevant TARGET EXPIRY DATE (**TED_{i,t}**) then only one OPTION CONTRACT is selected with EXPIRY DATE as the first available LISTED EXPIRY DATE (the "NEAR EXPIRY DATE (**NED_{i,t}**)").



Otherwise, two OPTION CONTRACTS are selected with respective EXPIRY DATES as the two closest LISTED EXPIRY DATES enclosing the relevant TARGET EXPIRY DATE, the nearer LISTED EXPIRY DATE being the "NEAR EXPIRY DATE ($NED_{i,t}$)" and the farther LISTED EXPIRY DATE being the "FAR EXPIRY DATE ($FED_{i,t}$)".

2.3.2. OPTION TYPE (" X_i ")

In respect of each INDEX PORTFOLIO BUSINESS DAY "t" that is an OPTIONS ADJUSTMENT DAY, for each selected OPTION CONTRACT(s) "i" corresponding to each TARGET OPTION CONTRACT the relevant OPTION TYPE will be as detailed in section 1.2.

2.3.3. OPTION STRIKE (" K_i ")

In respect of each INDEX PORTFOLIO BUSINESS DAY "t" that is an OPTIONS ADJUSTMENT DAY, for each selected OPTION CONTRACT "i" with corresponding expiry date being the EXPIRY DATE, the OPTION STRIKE is calculated as:

$$K_i = \text{Nearest}(\text{Target Strike}_i \times \text{TSRI}_t, \text{Listed Target Strike Interval}_i, \text{Listed Strikes}_{i,t-1})$$

Where:

"**TSRI_t**" means the TARGET STRIKE REFERENCE Index as of the INDEX PORTFOLIO BUSINESS DAY "t" as detailed in section 1.2;

"**Target Strike_i**" means, in respect of each OPTION CONTRACT, the TARGET STRIKE as detailed for each OPTION CONTRACT in section 1.2; and

"**Listed Strikes_{i,t-1}**" means, in respect of each OPTION CONTRACT, all the strikes corresponding to LISTED OPTIONS which had at least one quote as published by the corresponding EXCHANGE on the SCHEDULED TRADING DAY immediately preceding the INDEX PORTFOLIO BUSINESS DAY "t".

"**Listed Target Strike Interval_i**" means, in respect of each OPTION CONTRACT, the ELIGIBLE LISTED OPTIONS STRIKE INTERVAL as detailed for each OPTION CONTRACT in section 1.2.

2.3.4. OPTION WEIGHTS (" $OptWgt_i$ ")

In respect of each INDEX PORTFOLIO BUSINESS DAY "t" that is an OPTIONS ADJUSTMENT DAY and in respect of each TARGET OPTION CONTRACT, the OPTION WEIGHT for each of the relevant OPTION CONTRACT(s) "i" is equal to:

- a) If only one INDEX PORTFOLIO CONSTITUENT is selected with EXPIRY DATE being the same as the relevant NEAR EXPIRY DATE then
 - a. 0% if on INDEX PORTFOLIO BUSINESS DAY "t" the relevant OPTION VALUATION adjusted by the OPTION SPREAD divided by the relevant UNDERLYING INDEX LEVEL is less than the OPTION PREMIUM FLOOR;



- b. If (a) is not applicable, then 100%;
- b) Otherwise, if two INDEX PORTFOLIO CONSTITUENTS are selected with EXPIRY DATES being the relevant NEAR EXPIRY DATE and the FAR EXPIRY DATE respectively then for each INDEX PORTFOLIO CONSTITUENT
 - a. 0% if on INDEX PORTFOLIO BUSINESS DAY "t" the relevant OPTION VALUATION adjusted by the OPTION SPREAD divided by the relevant UNDERLYING INDEX LEVEL is less than the OPTION PREMIUM FLOOR;
 - b. If (a) is not applicable, then:
 - i. For the INDEX PORTFOLIO CONSTITUENT with EXPIRY DATE coinciding with the NEAR EXPIRY DATE
if the NEAR EXPIRY DATE is less than 7 calendar days after the INDEX PORTFOLIO BUSINESS DAY "t":

$$\text{OptWgt}_i = 0\%$$

otherwise:

$$\text{OptWgt}_i = \frac{\tau_{TED_{i,t}, FED_{i,t}}^{STD}}{\tau_{NED_{i,t}, FED_{i,t}}^{STD}}$$
 - ii. For the INDEX PORTFOLIO CONSTITUENT with EXPIRY DATE coinciding with the FAR EXPIRY DATE

$$\text{OptWgt}_i = \frac{\tau_{NED_{i,t}, TED_{i,t}}^{STD}}{\tau_{NED_{i,t}, FED_{i,t}}^{STD}}$$

2.3.5. OPTION UNITS ("OptUnit_i")

In respect of each INDEX PORTFOLIO BUSINESS DAY "t" that is an OPTIONS ADJUSTMENT DAY, for each selected OPTION CONTRACT "i" that shall form part of the NEW OPTIONS, the OPTION UNITS to be traded are:

$$\text{OptUnit}_{i,t} = \text{Allocation}_i \times \frac{\text{IP}_{t-1} \times \text{OptWgt}_i}{\text{UI}_{i,t-1}}$$

Where:

"Allocation_i" means for the INDEX PORTFOLIO CONSTITUENT "i" the relevant ALLOCATION as detailed in section 1.2; and

"UI_{i,t-1}" means the UNDERLYING INDEX LEVEL corresponding to INDEX PORTFOLIO CONSTITUENT "i" on the INDEX PORTFOLIO BUSINESS DAY immediately preceding the INDEX PORTFOLIO BUSINESS DAY "t".



2.4. CALCULATION OF OPTION PARAMETERS CORRESPONDING TO EACH INDEX PORTFOLIO CONSTITUENT

In respect of each INDEX PORTFOLIO CONSTITUENT 'i' that is an OPTION CONTRACT, also interchangeably referred to as OPTION CONTRACT 'i', the relevant OPTION VALUATION, OPTION EXPIRATION VALUE and IMPLIED FORWARD is calculated using the provisions herein.

2.4.1. OPTION VALUATION ("**OptVal_{i,t}**")

For each INDEX PORTFOLIO CONSTITUENT "i" (that is an OPTION CONTRACT "i") in respect of each INDEX PORTFOLIO BUSINESS DAY "t", the OPTION VALUATION is equal to:

$$\text{OptionVal}_{i,t} = \text{OptSettPrice}_{i,t} \times \exp(\text{ODR}_t \times \tau_{ED,t}^{\text{CD}})$$

Where:

"**OptSettPrice_{i,t}**" means the OPTION SETTLEMENT PRICE of the relevant OPTION CONTRACT i as described in section 1.2;

"**ODR_t**" means the OPTION DISCOUNTING RATE in respect of the INDEX PORTFOLIO BUSINESS DAY "t".

If on any INDEX PORTFOLIO BUSINESS DAY "t", the INDEX ADMINISTRATOR is unable to determine the OPTION VALUATION (or the OPTION SETTLEMENT PRICE) using the above methodology or if such a day is a DISRUPTED DAY, then the INDEX ADMINISTRATOR will determine the relevant OPTION VALUATION on a best efforts basis in a commercially reasonable manner.

2.4.2. OPTION EXPIRATION VALUE ("**OptExpVal_i**")

For each INDEX PORTFOLIO CONSTITUENT "i" that is an OPTION CONTRACT "i", in respect of each INDEX PORTFOLIO BUSINESS DAY "t" that is also the expiry day for the relevant OPTION CONTRACT, the OPTION EXPIRATION VALUE is calculated as follows:

If the relevant OPTION TYPE is 'Call' then: **OptExpVal_i** = **max(0, USI_{i,t} – K_i)**

If the relevant OPTION TYPE is 'Put' then: **OptExpVal_i** = **max(0, K_i – USI_{i,t})**

Where:

"**USI_{i,t}**" means, the value of the UNDERLYING SETTLEMENT INDEX corresponding to OPTION CONTRACT "i" as of INDEX PORTFOLIO BUSINESS DAY "t" which is also the EXPIRY DATE for the relevant OPTION CONTRACT "i".



2.4.3. FORWARD VALUE ("**FwdVal_{i,t}**")

On each INDEX PORTFOLIO BUSINESS DAY t , the FORWARD VALUE corresponding to each INDEX PORTFOLIO CONSTITUENT " i " that is an OPTION CONTRACT " i " is calculated as:

$$\text{FwdVal}_{i,t} = K_{\text{ED}_{i,t}}^{\text{ATM}+} + \left(\text{LOptSet}_t^{\text{ED}_{i,C}, K_{\text{ED}_{i,t}}^{\text{ATM}+}} - \text{LOptSet}_t^{\text{ED}_{i,P}, K_{\text{ED}_{i,t}}^{\text{ATM}+}} \right) \times \exp(\text{BR}_{i,t} \times \tau_{\text{ED}_{i,t}}^{\text{CD}})$$

Where:

$K_{\text{ED}_{i,t}}^{\text{ATM}+}$ is, as of INDEX PORTFOLIO BUSINESS DAY " t ", the LISTED STRIKE corresponding to LISTED EXPIRY DATE corresponding to EXPIRY of OPTION CONTRACT " i " (ED_i) for which the difference in the OPTION SETTLEMENT PRICE corresponding to this LISTED STRIKE for OPTION TYPE 'Put' minus OPTION TYPE 'Call' is the least positive amount (i.e. it must be strictly positive). Such LISTED STRIKE should be strictly greater than $(1 - \text{FORWARD TOLERANCE}_i)$ of $\text{Ul}_{i,t}$ and strictly less than $(1 + \text{FORWARD TOLERANCE}_i)$ of $\text{Ul}_{i,t}$, where $\text{Ul}_{i,t}$ means the UNDERLYING INDEX LEVEL corresponding to INDEX PORTFOLIO CONSTITUENT " i " on the INDEX PORTFOLIO BUSINESS DAY " t ";

$\text{LOptSet}_t^{\text{ED}_{i,C}, K_{\text{ED}_{i,t}}^{\text{ATM}+}}$ is the OPTION SETTLEMENT PRICE for the 'Call' option with strike as $K_{\text{ED}_{i,t}}^{\text{ATM}+}$ and EXPIRY DATE ED_i , as of such INDEX PORTFOLIO BUSINESS DAY " t "; and

$\text{LOptSet}_t^{\text{ED}_{i,P}, K_{\text{ED}_{i,t}}^{\text{ATM}+}}$ is the OPTION SETTLEMENT PRICE for the 'Put' option with strike as $K_{\text{ED}_{i,t}}^{\text{ATM}+}$ and EXPIRY DATE ED_i , as of such INDEX PORTFOLIO BUSINESS DAY " t ".

" $\text{BR}_{i,t}$ " means the value of the BOX RATE corresponding to INDEX PORTFOLIO CONSTITUENT " i " in respect of INDEX PORTFOLIO BUSINESS DAY " t ".

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", 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 4.2 "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

"ALLOCATION" means for each TARGET OPTION CONTRACT, the Allocation specified in section 1.2.

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

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

"BOX RATE" On any day "t", if section 1.2 specifies a Bloomberg Ticker rather than a fixed percentage rate then the Box Rate is the value published on the relevant Bloomberg ticker specified in section 1.2. If no value is published on the relevant Bloomberg ticker on day "t", then the last available value shall be used.

"CDCC" means CALENDAR DAY COUNT CONVENTION as provided in section 1.2.

"CURRENCY OF INDEX PORTFOLIO CONSTITUENT "i" means the currency in which the INDEX PORTFOLIO CONSTITUENT "i" is denominated, as provided in section 1.2 in respect of each OPTION CONTRACT.

"CURRENT OPTIONS" means:

- a) in respect of the INDEX PORTFOLIO COMMENCEMENT DATE, the list of options detailed in Annex 1.
- b) in respect of any INDEX PORTFOLIO BUSINESS DAY, all LIVE OPTIONS that are not EXPIRING OPTIONS with respect to such INDEX PORTFOLIO BUSINESS DAY. For the avoidance of doubt, CURRENT OPTIONS shall include all NEW OPTIONS.

"DISRUPTED DAY" means any SCHEDULED TRADING DAY in respect of which:

- (i) a MARKET DISRUPTION EVENT has occurred in relation to any INDEX PORTFOLIO CONSTITUENT; and/or
- (ii) a MARKET DISRUPTION EVENT has occurred in relation to a PORTFOLIO REFERENCE INDEX COMPONENT; and/or
- (iii) any EXCHANGE or any RELATED EXCHANGE(S) fails to open for trading during its regular trading session;

"ELIGIBLE LISTED OPTIONS EXPIRATION DATES" means in respect of each TARGET OPTION CONTRACT, as provided in section 1.2. For the avoidance of doubt, if any Friday coincides with the expiry of any month-end expiration options, then the month-end expiring options will be considered for the eligible universe on such day.



"ELIGIBLE LISTED OPTIONS SETTLEMENT TIME" means in respect of each TARGET OPTION CONTRACT, as provided in section 1.2.

"ELIGIBLE LISTED OPTIONS STRIKE INTERVAL" means in respect of each TARGET OPTION CONTRACT, as provided in section 1.2.

"EXCHANGE" means, in respect of an INDEX PORTFOLIO CONSTITUENT, the exchange or quotation system on which that INDEX PORTFOLIO CONSTITUENT is principally traded, as provided in section 1.2 in respect of each TARGET OPTION CONTRACT.

"EXPIRING OPTIONS" means in respect of any INDEX PORTFOLIO BUSINESS DAY, all INDEX PORTFOLIO CONSTITUENTS, that are OPTION CONTRACTS, that are expiring on such INDEX PORTFOLIO BUSINESS DAY.

"EXPIRY DATE" means, the expiry date of the relevant INDEX PORTFOLIO CONSTITUENT as defined in section 2.3.1.

"FAR EXPIRY DATE" shall have the meaning given to such term in section 2.3.1.

"FORWARD TOLERANCE" shall have the meaning given to such term in section 1.2.

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

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

"INDEX COMPONENT" is each security reflected in the INDEX.

"INDEX CURRENCY" is the currency specified in the column "Currency" in section 1.2.

"INDEX LIVE DATE" means June 18th 2020.

"INDEX PORTFOLIO BUSINESS DAY" means each SCHEDULED TRADING DAY.

"INDEX PORTFOLIO COMMENCEMENT DATE" means the date as stated in section 1.2.

"INDEX PORTFOLIO CONSTITUENTS" means in respect of any INDEX PORTFOLIO BUSINESS DAY, as of close of such INDEX PORTFOLIO BUSINESS DAY all option contracts that have non-zero exposure in the portfolio including the option contracts that are due to expire on such INDEX PORTFOLIO BUSINESS DAY.

"LISTED EXPIRY DATES" means in respect of any INDEX PORTFOLIO BUSINESS DAY and in respect of each TARGET OPTION CONTRACT, all expiry dates corresponding to the LISTED OPTIONS which had a published quote as published by the corresponding EXCHANGE on the SCHEDULED TRADING DAY immediately preceding the INDEX PORTFOLIO BUSINESS DAY.

"LISTED OPTIONS" means in respect of any INDEX PORTFOLIO BUSINESS DAY and in respect of each TARGET OPTION CONTRACT, all the exchange traded options corresponding to the relevant UNDERLYING INDEX that are listed on the relevant EXCHANGE with expiry, settlement time and strike multiple corresponding to ELIGIBLE LISTED OPTIONS EXPIRATION DATES, ELIGIBLE LISTED OPTIONS SETTLEMENT TIME and ELIGIBLE LISTED OPTIONS STRIKE INTERVAL respectively.

"LISTED STRIKES" means in respect of any INDEX PORTFOLIO BUSINESS DAY and in respect of each TARGET OPTION CONTRACT, all strikes corresponding to the LISTED OPTIONS as of that INDEX PORTFOLIO BUSINESS DAY.



"LIVE OPTIONS" means in respect of any INDEX PORTFOLIO BUSINESS DAY, all INDEX PORTFOLIO CONSTITUENTS which are due to expire on or after such INDEX PORTFOLIO BUSINESS DAY.

"LONDON BUSINESS DAY" means any day (other than a Saturday or Sunday) on which commercial banks are open for general business in London.

"MARKET DISRUPTION EVENT" means in respect of any INDEX PORTFOLIO CONSTITUENT and/or any PORTFOLIO REFERENCE INDEX COMPONENT on any SCHEDULED TRADING DAY, the occurrence or existence of:

- (i) suspension or permanent discontinuation of, or limitation imposed on trading in (1) any INDEX PORTFOLIO CONSTITUENT on the relevant EXCHANGE or any PORTFOLIO REFERENCE INDEX COMPONENT on a relevant RELATED EXCHANGE or (2) any futures or options contracts relating to such INDEX PORTFOLIO CONSTITUENT or such PORTFOLIO REFERENCE INDEX COMPONENT on any relevant RELATED EXCHANGE(S);
- (ii) the closure on any SCHEDULED TRADING DAY of the relevant EXCHANGE or RELATED EXCHANGE in respect of any INDEX PORTFOLIO CONSTITUENT or, as the case may be, PORTFOLIO REFERENCE INDEX COMPONENT, prior to its scheduled closing time unless such earlier closing is announced by such EXCHANGE or RELATED EXCHANGE(S) at least one hour prior to the earlier of: (i) the actual closing time for the regular trading session on such EXCHANGE or RELATED EXCHANGE(S) on such SCHEDULED TRADING DAY; and (ii) the submission deadline for orders to be entered into the relevant EXCHANGE or RELATED EXCHANGE(S) system for execution as at the close of trading on the relevant EXCHANGE or RELATED EXCHANGE(S) on such SCHEDULED TRADING DAY;
- (iii) an event (other than an early closure as described in sub-paragraph (ii) above) that disrupts or impairs the ability of market participants in general to effect transactions in, or obtain market values for (1) any INDEX PORTFOLIO CONSTITUENT on the relevant EXCHANGE or any PORTFOLIO REFERENCE INDEX COMPONENT on a RELATED EXCHANGE or (2) any futures or options contracts relating to such INDEX PORTFOLIO CONSTITUENT or such PORTFOLIO REFERENCE INDEX COMPONENTS on any relevant RELATED EXCHANGE(S), in each case, as determined by the INDEX ADMINISTRATOR

in each case, which the INDEX ADMINISTRATOR determines is material;

"NEAR EXPIRY DATE" shall have the meaning given to such term in Section 2.3.1.

"NEW OPTIONS" means in respect of any INDEX PORTFOLIO BUSINESS DAY, all INDEX PORTFOLIO CONSTITUENTS, that are OPTION CONTRACTS, to which exposure is acquired on such INDEX PORTFOLIO BUSINESS DAY.

"OPTION CONTRACT" means any option contract within the universe of LISTED OPTIONS with contract terms as stated in Table 2. Each OPTION CONTRACT "i" corresponding to each TARGET OPTION CONTRACT can be uniquely defined using three parameters: (i) Option Expiry Date "ED_i" (ii) OPTION TYPE "X_i" (where X ∈ {'C=Call', 'P=Put'}) and (iii) OPTION STRIKE "K_i".

"OPTION DISCOUNTING RATE" has the meaning as defined in section 1.2.



"OPTION TYPE" means for each OPTION CONTRACT, the OPTION TYPE specified in section 1.2.

"OPTION SETTLEMENT PRICE" means for any option (the *"Base Option"*) on any INDEX PORTFOLIO BUSINESS DAY, if there exists at least one fresh quote between 5:00 p.m. CET and 5:30 p.m. CET (adjusted accordingly for half trading days) then, the OPTION SETTLEMENT PRICE of the relevant option is the settlement price as published by the corresponding EXCHANGE, and such a settlement price is considered to be a VALID OPTION SETTLEMENT PRICE.

If the *"Base Option"* does not have a VALID OPTION SETTLEMENT PRICE then, the relevant OPTION SETTLEMENT PRICE is calculated:

1. using the Black-Scholes model where the forward is calculated as per section 2.1, the rate is equal to the relevant BOX RATE and the volatility is calculated using square-root of the variance derived by:
 - a. linearly interpolating the variances of two options enclosing the strike of the *Base Option*, given that each of these two options have a VALID OPTION SETTLEMENT PRICE and the strikes of each of these two enclosing options is within the following:
 - i. if the strike of the *Base Option* is between 95% and 105% of the UNDERLYING INDEX LEVEL, (+/-)50 index points of the strike of the *Base Option*, OR
 - ii. if the strike of the *Base Option* is between 90% and 95% of the UNDERLYING INDEX LEVEL or between 105% and 110% of the UNDERLYING INDEX LEVEL, (+/-)100 index points of the strike of the *Base Option*, OR
 - iii. (+/-)150 index points in all other cases, OR
 - b. if only one such option with a VALID OPTION SETTLEMENT PRICE is available that also satisfied one of the conditions in a.i., a.ii. and a.iii. above then the variance of this option will be taken as the variance of the *Base Option*

Note: The implied volatility of the relevant nearest option(s) shall be derived using section 2.1.

CET is the Central European Time

"OPTION SPREAD" means, the spread charged for trading the relevant option as detailed in section 2.1.

"OPTION STRIKE" means, the strike level of the relevant option as detailed in section 2.3.3.

"OPTION UNITS" means the number of units traded of the relevant option as detailed in section 2.3.5.

"OPTION WEIGHT" means the weight in the relevant option as detailed in Section 2.3.4.

"OVERSIGHT COMMITTEE" shall have the meaning as defined in Section 3.5.

"PORTFOLIO REFERENCE INDEX" means each UNDERLYING INDEX corresponding to each INDEX PORTFOLIO CONSTITUENT.



"PORTFOLIO REFERENCE INDEX COMPONENT" means in respect of each PORTFOLIO REFERENCE INDEX any share, financial instrument or security, asset or other component referenced by such PORTFOLIO REFERENCE INDEX.

"RELATED EXCHANGE(S)" means in respect of each PORTFOLIO REFERENCE INDEX COMPONENT, the exchange or quotation system on which that PORTFOLIO REFERENCE INDEX COMPONENT is principally traded, as determined by the INDEX ADMINISTRATOR.

"RISK FREE RATE" means rate as provided in section 1.2. On any day "t", if section 1.2 specifies a Bloomberg Ticker rather than a fixed percentage rate then the RISK FREE RATE is the value published on the relevant Bloomberg ticker specified in section 1.2. If no value is published on the relevant Bloomberg ticker on day "t", then the last available value shall be used.

"SCHEDULED TRADING DAY" has the meaning as defined in section 1.2.

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

"STDCC" means SCHEDULED TRADING DAY COUNT CONVENTION as provided in section 1.2.

"TARGET EXPIRY DATE" means in respect to each INDEX PORTFOLIO BUSINESS DAY "t" that is an OPTIONS ADJUSTMENT DAY, for OPTION CONTRACT the relevant TARGET EXPIRY DATE will be the INDEX PORTFOLIO BUSINESS DAY that is approximately one TARGET MATURITY PERIOD after the relevant OPTIONS ADJUSTMENT DAY. For the avoidance of doubt, given the OPTIONS ADJUSTMENT DAY is always Friday each week (or if such day is not an INDEX PORTFOLIO BUSINESS DAY, then the immediately preceding INDEX PORTFOLIO BUSINESS DAY), the TARGET EXPIRY DATE will always be the Friday in four weeks' time or, if this is not an INDEX PORTFOLIO BUSINESS DAY, then the immediately preceding INDEX PORTFOLIO BUSINESS DAY is taken.

"TARGET MATURITY PERIOD" means the period defined in section 1.2 in respect of each OPTION.

"UNDERLYING INDEX" is defined in section 1.2 for each OPTION CONTRACT.

"UNDERLYING INDEX LEVEL" on any INDEX PORTFOLIO BUSINESS DAY "t" is the closing price of the UNDERLYING INDEX as published by the UNDERLYING INDEX SPONSOR on that INDEX PORTFOLIO BUSINESS DAY "t".

"UNDERLYING INDEX SPONSOR" is defined in section 1.2 for each UNDERLYING INDEX corresponding to each OPTION CONTRACT. and

"UNDERLYING SETTLEMENT INDEX" is defined in section 1.2 for each OPTION CONTRACT.

"VALID OPTION SETTLEMENT PRICE" see OPTION SETTLEMENT PRICE.



ANNEX 1

In respect of the INDEX PORTFOLIO COMMENCEMENT DATE, the list of options is:

Table 4

OTC Units	Expiry	Strike
-0.00212776098265108	20190215	2900
-0.00564001427570479	20190125	2900
-0.00282000713785239	20190215	2900
-0.00407625523492924	20190201	3000
-0.00407625523492924	20190215	3000
-0.00818158801488408	20190215	3025

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