

GUIDELINE

Solactive Palladium Futures Leverage Index Family

Version 1.1 dated January 28th, 2019



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This document contains the underlying principles and regulations regarding the structure and the operating of the Solactive Palladium Futures Leverage Index Family (the “Indices”). Solactive AG shall make every effort to implement regulations. Solactive AG does not offer any explicit or tacit guarantee or assurance, neither pertaining to the results from the use of the Index nor the Index value at any certain point in time nor in any other respect. The Indices are merely calculated and published by Solactive AG and it strives to the best of its ability to ensure the correctness of the calculation. There is no obligation for Solactive AG – irrespective of possible obligations to issuers – to advise third parties, including investors and/or financial intermediaries, of any errors in the Indices. The publication of the Indices by Solactive AG is no recommendation for capital investment and does not contain any assurance or opinion of Solactive AG regarding a possible investment in a financial instrument based on this Index.

Introduction

This document is to be used as a guideline with regard to the composition, calculation and management of the Indices. Any changes made to the guideline are initiated by the Committee specified in section 1.6. The Indices are calculated and published by Solactive AG. The name "Solactive" is copyrighted.

1 Index specifications

The Solactive Palladium Futures Leverage Index Family (the "Indices") are Indices of Solactive AG and are calculated and distributed by Solactive AG.

The Palladium Futures Leverage Index Family consists of 18 Indices. Each Index replicates the performance of a hypothetical investment in an underlying rolling futures index based on the front Palladium future taking into account interest rates and according to a specific level of leverage.

The Index are calculated and published in US Dollar.

1.1 Short name and ISIN

The levels of the Indices are distributed under the identifiers stated in Section 4.3.

1.2 Initial value

The Indices are based on 1000.00 at the close of trading on the Base Date.

1.3 Distribution

The Index is published via the price marketing services of Boerse Stuttgart AG and is distributed to all affiliated vendors. Each vendor decides on an individual basis as to whether he will distribute/display the Index via his information systems.

1.4 Prices and calculation frequency

The levels of the Underlying Rolling Futures Strategy and therefore the Indices are calculated on each Business Day based on the prices of the respective underlying assets. During the times of Live Calculation the Indices are calculated based on the "Most recent prices". The Closing Calculation is conducted based on the most recent settlement price.

The indices are calculated on every Business Day and on each Calculation Time. The level of each Index is calculated continuously in 15-second intervals during these hours. In the event that data cannot be provided to Reuters or to the pricing services of Boerse Stuttgart AG the Index cannot be distributed.

Any incorrect calculation is adjusted on a retrospective basis.

1.5 Decision-making bodies

A Committee composed of staff from Solactive AG is responsible for decisions regarding the composition of the Indices as well as any amendments to the rules (in this document referred to as the “Committee” or the “Index Committee”). The Committee shall also decide about the future composition of the Indices. If any Extraordinary Events should occur and the implementation of any necessary adjustments.

Members of the Committee can recommend changes to the guideline and submit them to the Committee for approval.

1.6 Publication

All specifications and information relevant for calculating the Index are made available on the <http://www.solactive.de> web page and sub-pages.

1.7 Historical data

Historical data is available from the Base Date.

1.8 Licensing

Licences to use the Index as the underlying value for derivative instruments are issued to stock exchanges, banks, financial services providers and investment houses by Solactive AG.

2 Calculation of the Index

2.1 Index formula

The Index Value on Business Day t is calculated in accordance with the following formula:

$$I_t = I_{t-1} \cdot \left(1 + L \cdot \left(\frac{UL_t}{UL_{t-1}} - 1 \right) + (IR_t - L \cdot SC_t) \cdot DCF \right)$$

with:

I_t = index fixing level on Business Day t

I_{t-1} = index fixing level on the fixing immediately preceding t

UL_t = Underlying Rolling Futures Strategy at fixing on Business Day t

L = Leverage factor

IR_{t-1} = interest rate on Business Day t-1

SC_t = spread cost on Business Day t

DCF = day count fraction, number of calendar days between t and t-1 divided by 360

2.2 Underlying Rolling Futures Strategy

The Underlying Rolling Futures Strategy on Business Day t is calculated in accordance with the following formula, subject to Market Disruptions:

If Business Day t-1 a Futures Roll Day:

$$UL_t = UL_{t-1} \cdot \frac{BF_t}{BF_{t-1} \cdot (1 + fee_{t-1})}$$

If t is a Business Day in between a Futures Roll Day and the last trade date of the Front Future (both excluding):

$$UL_t = UL_{t-1} \cdot \frac{BF_t}{BF_{t-1}}$$

Otherwise:

$$UL_t = UL_{t-1} \cdot \frac{FF_t}{FF_{t-1}}$$

With:

BF_t = Settlement Price of the Back Future on Business Day t

fee_{t-1} = Roll fee on Business Day t-1

FF_t = Settlement Price of the Front Future on Business Day t

2.3 Accuracy

The value of the Index will be rounded to 2 decimal places.

2.4 Extraordinary Adjustment

If at any given moment θ during a Business Day (t) an “Intraday Restrike Event” takes place, which means the following condition holds:

(i) If $L > 0$

$$\frac{UL_{t,\theta}}{UL_{EA_{t-1}}} < 1 - EAT$$

(ii) If $L < 0$

$$\frac{UL_{t,\theta}}{UL_{EA_{t-1}}} > 1 + EAT$$

with

$$UL_{EA_0} = UL_{t-1}$$

EAT = Extraordinary adjustment threshold as defined under section 4.3

Then such moment θ is deemed to be an “Intraday Restrike Event Time” and we define UI(EAi) as follows:

(i) If $L > 0$

$$UL_{EA_t} = \min_{v \in [\theta, \theta^+]} [UL_{t,v}]$$

(ii) If $L < 0$

$$UL_{EA_t} = \max_{v \in [\theta, \theta^+]} [UL_{t,v}]$$

and in such case the Index level shall be calculated in accordance with the following formulae:

$$I_{t,v} = \max \left[0, I_{EA_t} \cdot \left(1 + L \cdot \left(\frac{UL_{t,v}}{UL_{EA_t}} - 1 \right) \right) \right]$$

With:

$$I_{EA_t} = I_{t-1} \cdot \left(1 + L \cdot \left(\frac{UL_{EA_t}}{UL_{t-1}} - 1 \right) + (IR_t - L \cdot SC_t) \cdot DCF \right)$$

And for $i > 1$:

$$I_{EA_t} = I_{EA_{t-1}} \cdot \left(1 + L \cdot \left(\frac{UL_{EA_t}}{UL_{EA_{t-1}}} - 1 \right) \right)$$

The period $[\theta, \theta +]$ is the Intraday Restrike Event Observation Period.

The “Intraday Restrike Event Observation Period” is in respect of an Intraday Restrike Event, the period starting on and excluding the Intraday Restrike Event Time and finishing on and including the time falling 10 minutes after the Intraday Restrike Event Time θ .

If the Intraday Restrike Event Observation Period would not end by the Fixing Time, the Observation Period will be shortened so that the end time coincides with the fixing time.

2.5 Reverse split

If an Index level on any Business Day t is below 10, a reverse split is implemented 10 Business Days later after the fixing of the Index on that Business Day. As at the Fixing Time on that day the Index level will be multiplied by 100 and information about the reverse split will be published on the Solactive website.

3 Definitions

“Back Future” means the Eligible Palladium futures contract listed on the Exchange with the First Notice Date immediately following the First Notice Date closest to but greater than Business Day t .

The **“Base Date”** is 11th August 2017.

“Business Day” means any weekday except Saturday and Sunday where the Exchange is scheduled to be open for business.

An **“Eligible Palladium futures contract”** is the March, June, September and December Palladium futures contract listed on the Exchange.

“Extraordinary Event” is referring to the case if one or more underlyings are cease to exist.

“Exchange” is referring to the Chicago Mercantile Exchange.

“Futures Roll Day” means a Business Day t 10 Business Days prior to the First Notice Date of the Front Future.

“Front Future” means the Eligible Palladium futures contract listed on the Exchange with the First Notice Date closest to but greater than Business Day t .

“Index” means an index which belongs to the Solactive Palladium Futures Leverage Index Family and defined in Section 4.3.

The **“Index Calculator”** is Solactive AG or any other appropriately appointed successor in this function.

The **“Index Currency”** is USD.

“Calculation Time” means, in respect of each Business Day and each Index, any time between 8:00 AM CET and the Fixing Time of such Index on such Business Day.

“Closing Calculation” means, in respect of a Business Day, the calculation of the Indices at the Fixing time.

“Fixing Time” means, in respect of each Business Day and each Index, 10:00 PM CET.

“Interest rate” means the USD Overnight LIBOR Rate as displayed under the Reuters RIC USDONFSR=

“Most recent price” means, in respect of a Business Day and a calculation time v , the most recent published average of the trade, bid and ask price of the underlying at or immediately before v , as provided by Reuters.

“Most recent settlement price” means, in respect of a Business Day t , the most recent published settlement price by the Exchange as provided by Reuters.

“Roll fee” is zero at the time of finalization of this guideline. However, the fee can be updated from time to time by Solactive AG. Any changes to the roll fee will be published on the Solactive website at least five Business Days before the change becomes effective.

4 Appendix

4.1 Contact data

Information regarding the Index concept

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4.2 Calculation of the Index – change in calculation method

The application by the Index Calculator of the method described in this document is final and binding. The Index Calculator shall apply the method described above for the composition and calculation of the Indices. However it cannot be excluded that the market environment, supervisory, legal, financial or tax reasons may require changes to be made to this method. The Index Calculator may also make changes to the terms and conditions of the Indices and the method applied to calculate the Indices, which he 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 Calculator is not obliged to provide information on any such modifications or changes. Despite the modifications and changes the Index Calculator will take the appropriate steps to ensure a calculation method is applied that is consistent with the method described above.

4.3 Identifiers

Index	ISIN	Index RIC	Leverage Factor	EAT in %	Spread Cost in %
Solactive Palladium Futures x2 Leverage Index		.SOPAF2L	2	45	1.0
Solactive Palladium Futures x2 Short Leverage Index		.SOPAF2S	-2	45	-1.0
Solactive Palladium Futures x4 Leverage Index		.SOPAF4L	4	21	1.0
Solactive Palladium Futures x4 Short Leverage Index		.SOPAF4S	-4	21	-1.0
Solactive Palladium Futures x5 Leverage Index		.SOPAF5L	5	17	1.0
Solactive Palladium Futures x5 Short Leverage Index		.SOPAF5S	-5	17	-1.0
Solactive Palladium Futures x6 Leverage Index		.SOPAF6L	6	14	1.0
Solactive Palladium Futures x6 Short Leverage Index		.SOPAF6S	-6	14	-1.0
Solactive Palladium Futures x8 Leverage Index		.SOPAF8L	8	10	1.0

Solactive Palladium Futures x8 Short Leverage Index	.SOPAF8S	-8	10	-1.0
Solactive Palladium Futures x10 Leverage Index	.SOPAF10L	10	8	1.2
Solactive Palladium Futures x10 Short Leverage Index	.SOPAF10S	-10	8	-1.2
Solactive Palladium Futures x12 Leverage Index	.SOPAF12L	12	7	1.4
Solactive Palladium Futures x12 Short Leverage Index	.SOPAF12S	-12	7	-1.4
Solactive Palladium Futures x15 Leverage Index	.SOPAF15L	15	6	1.6
Solactive Palladium Futures x15 Short Leverage Index	.SOPAF15S	-15	6	-1.6
Solactive Palladium Futures x16 Leverage Index	.SOPAF16L	16	5	1.6
Solactive Palladium Futures x16 Short Leverage Index	.SOPAF16S	-16	5	-1.6

4.4 Change of short costs for the short leverage indices

With effective date 28th January 2019, the Spread Costs for the Short Leverage Indices were adjusted to reflect a deduction of costs incurred in connection with holding a position in an underlying rolling futures index. The amount of the costs to be considered remains unchanged, but the sign changes to minus to reflect the deduction of the costs mathematically correct. The adjustment was necessary in order to achieve the index's objective of replicating the performance of a hypothetical investment in an underlying rolling futures index.