GUIDELINE

DB Trend Intraday Equity Short Only Index

Version 1.00 dated February 20th, 2019

Contents

This document contains the underlying principles and regulations regarding the structure and the operating of the DB Trend Intraday Equity Index (the "Index")**.** 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 Index is 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 Index. The publication of the Index 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 Index**.** Any changes made to the guideline are initiated by the Committee specified in section 1.4. The Index is calculated and published by Solactive AG. The name "Solactive" is copyrighted.

1 Index specifications

The DB Trend Intraday Equity Short Only Index is an Index of Deutsche Bank AG and is calculated, distributed and administrated by Solactive AG.

The Index is a proprietary index of Deutsche Bank AG intended to track the performance of a strategy that trades the daily trend of the S&P 500 (the Underlying Index). In each of three times during an Index Business Day, the Index notionally buys or sells the Futures in a size proportional to the Signal measured at such time and unwinds all Futures notionally bought or sold on such day at the market close. The Signal is proportional to the percentage difference between the closing level of the Underlying Index on the immediately preceding Index Business Day and the level of the Underlying Index at the time the Signal is measured. The Index will not trade any Futures if the Signal does not meet a minimum variable threshold. Each of the three Signals is determined using a five minute TWAP process applied to the level of the Underlying Index starting at 11:45 a.m., 12:45 p.m. and 2:15 p.m. New York City time, respectively. Unless the Signal is zero, the Futures are traded at prices determined by a 15 minute TWAP process starting 12:00 p.m., 1:00 p.m. and 2:30 p.m. New York City time, respectively. All Futures notionally bought or sold during an Index Business Day will be unwound at the end of the day at a price based on the closing level of the Underlying Index on such day adjusted by the Futures Cash Basis.

The Index will not trade any Futures on an Index Business Day that is a half trading day on the Futures Exchange.

The Index is calculated as an Excess Return Index and published in US Dollar.

1.1 Short name and ISIN

The Index is distributed under ISIN DE000SLA7M36; the WKN is SLA7M3. The Index is published in Bloomberg under the code <DBSTIDUU Index>.

The Notional Index is distributed under ISIN DE000SLA8RW4; the WKN is SLA8RW. The index is published in Bloomberg under the code <DBSTIDUN Index>.

1.2 Initial value

The Index is based on a starting level of 694.605 as of December 31, 2003.

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 Index is calculated on a next day basis and before 11am, Frankfurt time. In the event that data cannot be provided to Reuters the Index cannot be distributed.

Any incorrect calculation is treated in line with Solactive's Correction Policy as set out in section 3.1.

1.5 Oversight Committee

A Committee composed of staff from Solactive AG is responsible for the oversight of the Index as well as any amendments to the rules (in this document referred to as the "Committee" or the "Oversight Committee") in line with the statutes of the Committee. Members of the Committee can recommend changes to the guideline and submit them to the Committee for approval in line with Solactive's Methodology Policy.

1.6 Historical data

Historical data is available from the index base date on December 31, 2003.

1.7 Licensing

The index may be used as underlying value for financial instruments. All IP and licensing rights are retained by Deutsche Bank AG.

2 Calculation of the Index

2.1 Index formula

In order to calculate the Index Level, on each Index Business Day, the Index Administrator will observe the intraday market data specified in Section 2.1 i) (Data required for the calculation of the Index) below from the relevant Price Source, subject to the provisions set out in Section 3 (Disruption Events and Recalculation).

"**Price Source**" means either (i) Reuters or (ii) any other market price information source, selected by the Index Administrator in its sole discretion.

"**RIC**" means Reuters Instrument Code.

(i) Data required for the calculation of the Index:

"**TWAP Observation Periods**" or "**TWAP Observation Period(i)**" means 15 minute windows starting at 12:00 p.m. New York City time when i=1, 1:00 p.m. New York City time when i=2 and 2:30 p.m. New York City time when i=3.

"**Signal TWAP Observation Period**" or "**Signal TWAP Observation Period(i)**" means 5 minute windows starting at 11:45 a.m. New York City time when i=1, 12:45 p.m. New York City time when i=2 and 2:15 p.m. New York City time when i=3.

"**TWAP Process**" means a process of establishing a time-weighted average level on any Index Business Day(t). During any of the TWAP Observation Periods or Signal TWAP Observation Periods, the relevant level will be recorded at every 15 second interval (each interval being a "**TWAP Observation Interval**"). In respect of each TWAP Observation Interval, the level will be the most recent level at exactly the same time as such TWAP Observation Interval.

"**SPX Level**" or "**SPX(t)**" means, in respect of any date(t), the closing level of the Underlying Index.

"**SPX TWAP**" or "**SPXTWAP(t,i)**" means in respect of any date(t) and Signal TWAP Observation Period(i), the result of applying the TWAP process to the Underlying Index during the Signal TWAP Observation Period(i).

"**Futures TWAP**" or "**FuturesTWAP(t,i)**" means in respect of any date (t), and TWAP Observation Period (i), the result of applying the TWAP Process to the average "bid" and "ask" prices for the Relevant Futures Contract during the TWAP Observation Period(i).

"**Relevant Futures Contract**" means in respect of any date (t) the Futures with the nearest expiration after date (t).

"**Futures**" means each E-Mini futures contract on the Underlying Index, which is listed and traded on the Futures Exchange.

"**Futures Exchange**" means the Chicago Mercantile Exchange, or any successor to such exchange or quotation system or any substitute exchange or quotation system to which trading in futures contracts on the Underlying Index has temporarily relocated; provided that the Index Administrator has determined that there is comparable liquidity relative to futures contracts on the Underlying Index on such temporary substitute exchange or quotation system as on the original Futures Exchange.

"**Underlying Index**" has the meaning given in the Introduction.

"**Futures Basis TWAP**" or "**Futures Basis TWAP(t)**" is the result of applying the TWAP Process during the period starting 25 minutes before the close of the NYSE and ending 5 minutes before the close of the NYSE on date(t) to the difference between the results of (a) the average "bid" and "ask" prices for the Relevant Futures Contract minus (b) the level of the Underlying Index.

"**Futures Close**" or "**Futures Close(t)**" means in respect of any date(t), the sum of the SPX Level and the Futures Basis TWAP.

"**TWAP Disruption Event**" means, in respect of any relevant Index Calculation Date, an event or circumstance that makes it impossible or not practicable to carry out a TWAP Process for such Index Calculation Date, or the TWAP Process does not return a price for such Index Calculation Date including, without limitation, owing to the relevant bid or ask prices not being available or published.

If a calculated TWAP in respect to the *TWAP Observation Period* or *Signal TWAP Observation Period* is subject to a TWAP Disruption Event, the respective TWAP shall be set to zero.

2.2 Calculation of the Signal

(i) Percentage Change

The "**Percentage Change**" or "**PChange(t,i)**" in respect of any Index Business Day(t) and Signal TWAP Observation Period(i) is calculated according to the following equation:

$$PChange(t,i) = \frac{SPXTWAP(t,i) - SPX(t-1)}{SPX(t-1)}$$

If PChange(t, i) should be subject to a Market Disruption Event or TWAP Disruption Event as specified in section 2.1 i) and section 3.2 it shall be set to zero.

(ii) Signal Threshold

In respect of each Index Business Day(t), the "**Signal Threshold**" or "**Thresh(t)**" is:

$$Thresh(t) = 0.50 \times \sqrt{\frac{1}{22}\sum_{i=1}^{22} ln^2\left(\frac{SPX(t-i)}{SPX(t-1-i)}\right)}$$

(iii) Signal

In respect of each Index Business Day(t) and Signal TWAP Observation Period(i), the Signal and the notional number of Futures to be traded with respect to such Signal TWAP Observation Period or "**n(t,i)**" is determined in three steps.

First, a "**Multiplier**" or "**Mult(t,i)**" based on the Signal Threshold and the absolute value of the Percent Change for such Index Business Day(t) is calculated using the following formula:

$$Mult(t,i) = \begin{cases} 1 & \text{if } |PChange(t,i)| >= Thresh(t) + 0.1\% \\ (|PChange(t,i) - Thresh(t) + 0.1\%)/0.20\% | & \text{if } Thresh(t) + 0.1\% > |PChange(t,i)| > Thresh(t) - 0.1\% \\ 0 & Otherwise \end{cases}$$

Second, the "**Notional Amount**" or "**N(t,i)**" to trade is then determined based on the previous Index Business Day's Index Level(t-1), the Percentage Change and the Multiplier.

For $i = 1$:

$$Cap_1 = 0$$

For $i = 2$:

$$Cap_2 = Cap_0 - N(t,1)$$

For $i = 3$:

$$Cap_3 = -(N(t,1) + N(t,2))$$

$$N(t,i) = IL(t-1) \times Max\big(-33\%, Min(\text{Cap}_i, 20 \times PChange(t,i) \times Mult(t,i))\big)$$

Third, the notional number of Futures to trade or n(t,i) is a fraction equal to the Notional Amount divided by the SPX TWAP for that Index Business Day and Signal TWAP Observation Period.

$$n(t,i) = \frac{N(t,i)}{SPXTWAP(t,i)}$$

The notional number of Futures to trade n(t,i) will be rounded to two decimal places. If n(t,i) should be subject to a Market Disruption Event or TWAP Disruption Event as specified in section 2.1 i) and section 3.2 it shall be set to zero.

2.3 Calculation of Index Level

The Index Level is determined on each Index Business Day(t) as the sum of the gains or losses implied by any notional Futures trades executed on that Index Business Day.

$$IL(t) = IL(t\ -1) + MtM(t)$$

If the Index Business Day(t) is a day on which the Futures Exchange is scheduled to close at 1:00 p.m. ("**Half Day**"), then

$$MtM(t) = 0$$

If the Index Business Day(t) is not a Half Day:

$$MtM(t) = \sum_{i=1}^{3} n(t,i) \times (FuturesClose(t) - FuturesTWAP(t,i)) - 2 \times TC \sum_{i=l}^{3} |N(t,i)|$$

where:

IL(t) means the Index Level as of Index Business Day(t)

TC means the Transaction Cost of 0.015%

FuturesClose(t) has the meaning given in Section 2.1

FuturesTWAP(t,i) has the meaning given in Section 2.1

Prior to (and excluding) January 1, 2013 (the "**Index TWAP Date**"), the observation time for all relevant data will be set to the beginning of the relevant TWAP observation window. The data used both for SPX TWAP and Futures TWAP levels will be a single value of the Underlying Index or Futures taken at the beginning of the corresponding TWAP Observation Period or Signal TWAP Observation Period, as applicable.

2.4 Accuracy

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

2.5 Calculation of Notional Indices

The notional indices get calculated as follows:

$NotionalIL_t = HedgedUnit_{t-1} \times \sum_{i=l}^{3} |N(t,i)|$

With $HedgedUnit\_t$ being 1 for all t in the respect of the DBSTIDUN.

3 Disruption Events and Recalculation

3.1 Recalculation

Solactive AG makes the greatest possible efforts to accurately calculate and maintain its indices. However, the occurrence of errors in the index determination process cannot be ruled out. In such cases Solactive AG adheres to its publicly available Correction Policy.

3.2 Disruption Events

In periods of market stress Solactive AG calculates its indices following predefined and exhaustive arrangements set out in its publicly available Disruption Policy.

4 Definitions

"Index Business Day" means any day on which the Exchange is scheduled to be open for Trading.

"Exchange" means the New York Stock Exchange.

The **"Index Administrator"** is Solactive AG or any other appropriately appointed successor in this function.

The **"Index Currency"** is USD.

A **"Market Disruption Event"** is defined in section 3.

5 Appendix

5.1 Contact data

Information regarding the Index concept

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5.2 Calculation of the Index – change in calculation method

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