



Foxberry Floored Beta[®] Index Rules

Foxberry Ltd
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1 General Rules

1.1 This document

This document comprises the rules (the “**Index Rules**”) of the Foxberry Floored Beta[®] indices (each an “**Index**”), a notional rule-based proprietary index and is owned by Foxberry in its capacity as index owner (the “**Index Owner**”) and index administrator (the “**Index Administrator**”) of the Index.

1.1.1 Amendments

The Index Rules for the Index may be amended from time to time at the discretion of the Index Administrator and will be re-published (in a manner determined by the Index Administrator from time to time). Although the Index Rules are intended to be comprehensive and accurate, ambiguities may arise and errors or omissions may have been made. If so, the Index Administrator will resolve such ambiguities and, if necessary, amend the Index Rules to reflect such resolution. In the case of inaccuracy, the Index Administrator may amend the Index Rules to address errors or omissions.

Furthermore, as the Index is intended to be investable, the level of the Index will reflect any impediments to replicating the Index, for instance disruptions occurring to the components of the Index. Whilst every effort has been made to cater for such events in the Index Rules, events may arise which have not been catered for in the Index Rules, and in such case the Index Administrator may amend the methodology and/or make adjustments as it considers appropriate in good faith and in a commercially reasonable manner. The Index Administrator will advise of any such changes.

Any amendment of the Index Rules needs to be approved by the Index Committee as described in section 6.1. Any material amendments of the Index Rules will be communicated on the Index Administrator’s website.

1.1.2 No offer of securities

The Index Rules neither constitute an offer to purchase or sell securities nor specific advice of whatever form (tax, legal, accounting or regulatory)

in respect of any investment strategy or investment that may be linked to the Index.

1.2 Indices are synthetic

The Index is constructed on notional or synthetic exposure to various financial instruments, contracts or formulas. There is no actual portfolio of instruments nor assets to which any person is entitled or in which any person has any ownership interest. Any references in this document to the purchase or sale of instruments, contracts, securities or options shall refer to synthetic exposure only. The Index merely identify certain instruments or contracts, the performance of which are used as a reference point for the purposes of calculating the level of the Index.

1.3 Index Administrator

1.3.1 Standards

The Index Administrator shall act in good faith and in a commercially reasonable manner in respect of all determinations in connection with the Index.

1.3.2 Index Administrator determinations

All determinations of the Index Administrator pursuant to the Index Rules in respect of the Index and interpretation of the Index Rules shall be final, conclusive and binding and no person shall be entitled to make any claim against the Index Administrator. The Index Administrator shall not: (i) be under any obligation to revise any determination or calculation made or action taken for any reason in connection with the Index Rules or an Index; or (ii) have any responsibility to any person (whether as a result of negligence or otherwise) for any determinations made or anything done (or omitted to be determined or done) in respect of any Index or in respect of the publication of any Index Level (or failure to publish such level) or any use to which any person may put the Index or the Index Levels.

1.4 Calculation

1.4.1 Index Calculator

The Index Administrator or any affiliate, subsidiary or third party designated by it will act as calculation agent in connection with the Index (the “**Index Calculator**”). The Index Administrator may contract or delegate any calculations or determinations to the Index Calculator. The identity of the Index Calculator, if applicable, is detailed for each Index in the relevant section in chapter 4.

1.4.2 Publication of Index Levels

Subject to the occurrence of a Disrupted Day, in respect of the Index, the Index Calculator shall calculate and publish (in a manner determined by the Index Administrator from time to time) the level of the Index in respect of each Index Business Day. Such publication normally occurs no later than the following business day, but may be delayed due to operational complications including but not limited to: (i) the publication of an underlying data input is delayed; and/or (ii) the accuracy of an underlying data input is under dispute; and/or (iii) a determination of the Index Committee is required. Live calculation of the Index began on the Live Calculation Date.

1.5 Corrections

If, in respect of the Index: (i) the level or price of any instrument, contract, referenced index, variable, input or other matter which is used for any calculation relevant to the Index Level for any Index Business Day is subsequently corrected and the correction is published by the Exchange or relevant publication source; or (ii) the Index Administrator and/or Index Calculator identifies an error or omission in any of the calculations or determinations in respect of the Index Level for any Index Business Day, then, the Index Calculator may, if practicable and it considers such correction material, correct the published Index Level for such day and/or each subsequent Index Business Day and publish (in such manner determined by the Index Administrator) such corrected Index Level(s) as soon as reasonably practicable.

2 Introduction

2.1 Background

Equities as an asset class has offered investors significant returns over long investment horizons,¹ but from time to time suffers drawdowns which can be substantial.

Each Index in the Foxberry Floored Beta index suite aims to offer equity exposure but with a Protected Level. The Protected Level is determined by protecting a certain percentage of a certain previous Index Level over a certain time horizon as detailed further in this document. One example of such a protection specification is a maximum potential loss of 20% in any rolling one-year time horizon.²

It does this by synthetically enter into derivatives such as futures and options, and by applying certain risk budgeting and risk management techniques, determinations and allocations as detailed further in this document.

¹Past performance is not a guide to future returns.

²This is an illustrative example only. The exact specification of each Index is detailed in this document.

3 Methodology

3.1 Summary

3.1.1 Aim

The Index aims to offer exposure to an underlying Underlying Market whilst maintaining a Protected Level at each point in time, which acts as the minimum possible Index Level of the Index at that point in time. Such protection is achieved through the means of the construction of the Index as detailed in this document.

3.1.2 Futures and the Tracker Level

An index future is an exchange traded contract that references a certain underlying index. At the expiry of such future, the future will settle with reference to the underlying index. This means that an increase in the level of the underlying index tends to, all else equal, lead to an increase in the price of the future. Conversely, a decrease in the level of the underlying index tends to, all else equal, lead to a decrease in the price of the future. A future is similar to a so-called forward, but is a standardised contract which is traded on an exchange.

In the Index, the exposure to the relevant Underlying Market is achieved by reference to Futures Contracts, as specified for each Index in chapter 4.

Futures expire at a certain pre-defined schedules, e.g. once a quarter. To achieve a continuous exposure to the underlying market, a common strategy is to sell a future prior to its expiry and buy the next expiring future. This strategy is commonly referred to as rolling the futures.

The Index calculates the Tracker Level which represents the performance of a periodical synthetical rolling of the relevant Futures Contracts and is constructed as detailed in this document.

3.1.3 Asset Level

The Index then varies the synthetic allocation to the Tracker Level over time to target a specific risk level. To measure risk, the Index uses a so-called realised volatility measure. Volatility means the standard deviation

of returns and is a statistical measure of the variations of daily returns. The realised volatility measure in the Index is calculated by weighting the last 252 daily returns of the Tracker Level in an exponential manner, as detailed further in this document.

Subject to a rebalancing threshold, an increase in the realised volatility measure will lead to a decrease in the synthetic allocation to the Tracker Level. Conversely, a decrease in the realised volatility measure will lead to an increase in the synthetic allocation to the Tracker Level, subject to both a rebalancing threshold and a maximum allocation, as detailed further in this document.

The effect of this risk budgeted investment approach is measured by the Asset Level.

3.1.4 Options

An option lets the buyer participate in an underlying with a defined maximum loss. The maximum loss of an option is the option premium that the buyer paid for such option.

When purchasing an option, the buyer pays an option premium. Every day until the expiry of such option, the option premium of such option will be re-evaluated and will vary with market movements, such that if the option premium is higher than the option premium initially paid for the option, an option investor has made a profit, and conversely if the option premium is lower than the option premium paid for such option, the investor has made a loss at such point in time. The payoff at expiry will be according to a pre-defined formula that compares the so-called strike price of the option to the level of the underlying of the option.

There are two main types of options. A put option lets an investor protect the downside of an underlying and a call option lets an investor participate in the upside of an underlying. For instance, a call option tends to benefit, all else equal, if the level of the underlying of such option increases. At expiry, a call option gets its actual value through the payoff, which is determined by calculating the difference between the level of the underlying and the strike price of such option, floored at zero. At any point in time, a call option will have a certain participation to changes in the price of the underlying. This measure is called delta and will vary with market movements and through the passage of time. A call option has a delta between 0% and 100%, meaning that it will participate between 0% and 100% in the change in price of the underlying.

The Index uses the fact that the so-called put-call parity states that a forward, which gives linear exposure to an underlying, and a put option, which protects the downside of an underlying, can also be expressed in terms of a call option. To simplify construction, the Index uses this relationship and synthetically purchases Call Options as specified in this document.

The Index also uses the fact that the maximum loss possible stemming from the purchase of an option is limited to the option premium itself.

3.1.5 Concluding construction

Each Index Business Day (unless in the case of a sell-back which is described below) the Index synthetically buys a Call Option, with the underlying being the Asset Level. By entering into such Call Options on a daily basis, the Index aims to achieve diversification in terms of strikes and tenors. The maximum number of outstanding Call Options is $N_POS - 1$.

The amount synthetically purchased is determined through a risk budgeting approach. The risk budgeting approach manages the outstanding option premium vs. a certain risk objective, as measured by the outstanding option premium as a ratio of the maximum allowed loss at any point in time, which is further detailed in this document.

To achieve a construction where the maximum potential loss over a certain time horizon is limited, the total outstanding option premium is limited accordingly on a daily basis. For instance, if the maximum allowed loss for the Index is 20% on a specific day, the outstanding option premium will be equal to or less than 20%.¹ This is ensured by the risk budgeting mechanism within the index which does not allow the purchase of options if the combined option premium exceeds a threshold. In addition, if the options that the index already holds become more valuable, for instance by becoming more in-the-money, such that the outstanding option premium exceeds a threshold, the index will synthetically sell options it already holds to reduce the outstanding option premium, in a so-called sell-back.

Each Index is either total return or excess return, as specified for each Index in chapter 4. Each total return Index accrues an interest rate as detailed in this document whereas each excess return Index does not.

The Index is net of certain embedded transaction costs, which have a negative impact on the index performance and occur each time a future is synthetically bought, sold or rolled as well as each time a Call Option is synthetically purchased or sold. These adjustments are detailed in chapter 4 and may be updated from time to time but are always available in the latest version of this document.

As options have a varying delta, as described in section 3.1.4, the aggregate delta of the Index will vary. As a consequence, the aggregate delta of the Index may increase when the Underlying Market is showing positive performance, due to the delta of the outstanding Call Options increasing. In addition, since the Index is managing the total option premium outstanding rather than the delta, and taking into account the varying exposure of the Asset Level as described in section 3.1.3 and 3.6.11, this will further cause the aggregate delta of the Index to vary. In particular, the exposure

¹This is an illustrative example only.

of the Asset Level can be expected to increase when the historical realised volatility is decreasing, causing the delta of each outstanding Call Option to increase and in turn increasing the aggregate delta of the Index. Due to these factors, the Index can achieve a leveraged position, defined as a situation where the aggregate delta of the Index is greater than 100%. It should be noted that such leveraged position does not impact the ability of the Index to limit the outstanding option premium in accordance with its risk budgeting algorithm, and hence does not impact the ability of the Index to maintain an Index Level equal to or greater than the Protected Level.

3.2 Overview

The exact specification for each Index is defined in chapter 4, where the `PROTECTION_FLOOR` specifies the maximum potential percentage loss possible in a time period of a number of `PROTECTION_IBD` rolling Index Business Days.

Chapter 4 also specifies for each Index whether it is a total return Index (`IS_TR = True`) or an excess return Index (`IS_TR = False`).

The rest of chapter 3 describes in further details the methodology of the Index and is organised as follows:

- Section 3.3 contains some important key terms and definitions.
- Section 3.4 describes how the calendar and the periodical mechanism is constructed with regard to the different type of days within the Index and the notation used to refer to such days.
- Section 3.5 describes the defined constants.
- Section 3.6 describes the variables of the Index, which are calculations and determinations required to calculate the Index. In particular, variable 1 describes the calculation of the Index Level.

3.3 Definitions

In addition to the specific definitions defined in the relevant section in chapter 4, the following key terms and definitions are defined:

3.3.1 General definitions

Index Level means with respect to a certain date, the level of the Index as determined in accordance with the methodology described in this document and variable *IndexLevel*.

Protected Level means with respect to a certain date and Index, a level that at such point in time can not exceed the Index Level.

In Level means with respect to a certain date and Index, a contribution to the Index Level which is not stemming from outstanding option premium at such point in time.

Out Level means with respect to a certain date and Index, a contribution to the Index Level which is stemming from the aggregate outstanding option premium at such point in time.

Tracker Level means with respect to a certain date and Underlying Market, a level representing the performance of synthetically investing and periodically rolling certain Futures Contracts.

Asset Level means with respect to a certain date and Tracker Level, a level representing the performance of synthetically investing in the Tracker Level but adjusting potentially daily the exposure to target a certain level of risk as measured by volatility.

3.3.2 Timing definitions

The following timing related key terms and definitions are defined:

Scheduled Closing Time means in respect of an Exchange and a Scheduled Trading Day, the scheduled weekday closing time of such Exchange on such Scheduled Trading Day, without regard to after hours or any other trading outside of the regular trading session hours.

Valuation Time means, in respect of a Scheduled Trading Day, the Scheduled Closing Time on the Exchange on such Scheduled Trading Day. If the Exchange closes prior to its Scheduled Trading Day, then the Valuation Time shall be such actual closing time.

3.3.3 Instrument related definitions

The following instruments related key terms and definitions are defined:

Call Option means a synthetic call option which may be synthetically purchased or sold in the Index in accordance with this document.

Option Identifier means an integer number used to identify a specific Call Option, ranging from 0 to $N_POS - 1$ and denoted with the superscript k , e.g. Option ^{k} can be used to refer to the Call Option with option identifier k .

Futures Contract means any futures contract trading on the Exchange with the relevant Exchange Symbol scheduled to expire on an Expiry Date in one of the Expiry Months.

First Futures Contract means the Futures Contract that expires on the first Expiry Date to occur from and including any Index Business Day.

Second Futures Contract means the second Futures Contract that expires on the second Expiry Date to occur from and including any Index Business Day.

Reference Index means with respect to a certain Futures Contract, the underlying index that such Futures Contract is referencing and which is used in determining the settlement prices of such Futures Contract.

Relevant Interest Rate means the interest rate which is specified by INTEREST_RATE_FIXING in the relevant table in chapter 4, expressed (or adjusted accordingly) as a percentage per annum figure.

FEDL01 means the interest rate Fed Funds Effective Rate.

EONIA means the interest rate EONIA.

EONIADE means with regard to a date prior to 4 January 1991, a money market rate reported by Frankfurt banks with regard to overnight money, and with regard to later dates EONIA.

STIB1D means the interest rate STIBOR T/N.

3.3.4 Calendar related definitions

The calendar related key terms and definitions below are defined. Also refer to section 3.4 for further details on the calendar.

Index Business Day means any day which is an Exchange Business Day and not an Additional Holiday (if applicable for the Index) falling on or after the INCEPTION_DATE.

Exchange Business Day means any day on which the Exchange is open for trading for their respective regular trading sessions of the Futures Contracts.

Scheduled Trading Day means any day on which the Exchange is scheduled to be open for trading in the Futures Contract for their regular trading sessions.

Roll Day means each, with respect to each Expiry Day, the Index Business Day that is falling on the specified ROLL_DATE_OFFSET, as defined in the relevant table in chapter 4, number of Index Business Days immediately preceding such Expiry Day.

Expiry Day means any day which is an Expiry Date.

2nd Future Used Day means any day in a 2nd Future Used Period.

2nd Future Used Period means the period from and excluding any Roll Day to and including the next following Expiry Day.

3.3.5 Disruption definitions

The following disruption related key terms and definitions are defined:

Additional Trading Disruption Event means the occurrence of any of the following that the Index Administrator (in its sole and absolute discretion) considers material: (i) a decision is made that to permanently discontinue trading in the Futures Contract; (ii) on any Scheduled Trading Day, the occurrence or existence of a lack of, or a material decline in, the liquidity in the market for trading in any Futures Contract; (iii) any event or any condition (including without limitation any event or condition that occurs as a result of the enactment, promulgation, execution, ratification, interpretation or application of, or any change in or amendment to, any law, rule or regulation by an applicable governmental authority) that results in an illiquid market for trading in any Futures Contract.

Change in Law means due to the adoption of, or any change in, any applicable law, regulation or rule (including, without limitation, any tax law) or the promulgation of, or any change in, the interpretation, application, exercise or operation by any court, tribunal or regulatory authority with competent jurisdiction of any applicable law, rule, regulation or order (including, without limitation, any action taking by a taxing authority, or any exchange or trading facility), the Index Administrator determines in good faith that it has become illegal to hold, acquire or dispose of the Futures Contracts;

Disrupted Day means any Scheduled Trading Day on which: (i) an Exchange fails to open for trading during its regular trading session; and/or (ii) an Additional Trading Disruption Event; and/or (iii) a Market Disruption Event has occurred or is occurring.

Exchange Disruption means any event (other than an Early Closure) that disrupts or impairs (as determined by the Index Administrator) the ability of market participants in general to effect transactions in, or obtain market values for: (i) any securities comprised in the Reference Index; or (ii) futures or options contracts relating to the Reference Index on the Exchange.

Early Closure means the closure on any Exchange Business Day of the Exchange prior to its Scheduled Closing Time unless such earlier closing is announced by such Exchange at least one hour prior to the earlier of: (i) the actual closing time for the regular trading session on

such Exchange on such Exchange Business Day; and (ii) the submission deadline for orders to be entered into the Exchange system for execution at the relevant Valuation Time on such Exchange Business Day.

Market Disruption Event means the occurrence or existence of: (i) a Trading Disruption; (ii) an Exchange Disruption, which in either case the Index Administrator determines is material; or (iii) an Early Closure.

Trading Disruption means any suspension or limitation imposed on trading by the Exchange or otherwise and whether by reason of movements in price exceeding limits permitted by the Exchange or otherwise in futures or options contracts relating to the Reference Index on the Exchange.

Official Settlement Price means the official settlement price or exercise settlement value, as applicable and however described under the rules of the Exchange or its clearing house of the relevant Futures Contract.

3.3.6 Index specific definitions

The following definitions are specific to each Index. The purpose of the below is to serve as a summary of these definitions and they shall be read in conjunction with the specific definitions for each Index which are detailed in the the relevant section of chapter 4.

Index Name means the name of the Index.

Bloomberg Ticker means the Bloomberg ticker identifier of the Index.

Reuters RIC means the Reuters RIC identifier of the Index.

WKN means the WKN identifier of the Index.

ISIN means the ISIN identifier of the Index.

Live Calculation Date means the the date on which the Index Calculator started to publicly disseminate the Index Levels of the Index.

Live Methodology Date means the date on which the Index Administrator had finalised the algorithm of the Index.

Additional Holiday means any holidays to be observed in addition to the holidays observed by each relevant Exchange.

Exchange means the Exchange on which the relevant Futures Contracts are primarily traded.

Exchange Symbol means the root symbol of the relevant Futures Contracts.

Expiry Months means the months on which the relevant Futures Contracts expiries.

Expiry Date means, with regard to the Expiry Months, the Scheduled Trading Day which is considered to be the standard expiry for a Futures Contract in such month.

Underlying Market means the underlying market of each Reference Index.

3.4 Calendar

3.4.1 Construction

This section describes the construction of the calendar and the periodical mechanism the Index is following.

The **INCEPTION_DATE** is also a $START^0$ Day. The immediately following Index Business Day will be a $START^1$ Day, and the Index Business Day immediately following such day will be a $START^2$ Day and so forth such that a $START^k$ Day will be the immediately following Index Business Day after a $START^{k-1}$ Day, until the $START^{N_{POS}-1}$ Day, which will be followed by the $START^0$ Day, at which point the cycle of $START^k$ Day repeats.

The day falling on **TERM_CD** calendar days immediately following each $START^k$ Day will be an END^k Day, provided that if such day is not an Index Business Day, the first immediately following Index Business Day will be the END^k Day.

The Index Business Day immediately following each END^k Day will be a $REMOVE^k$ Day.

In addition, the calendar has certain Expiry Days and the corresponding Roll Days, as defined elsewhere in this document.

When a determination with regard to the calendar of future Index Business Days needs to be made and the trading calendar with respect to the Exchange Business Days has not yet been announced for such period, the future Exchange Business Days will be predicted based on the calendar logic of previous years. As such trading calendar of the Exchange Business Day is announced, as well as in the case of new holidays being introduced, the forward looking calendar of the Index Business Days will be updated accordingly to reflect the revised trading calendar.

3.4.2 Day notation

Specific notation to reference certain days relative to day t and an offset k is introduced. The notation t_k^{tag} refers to a day of type tag which is k days of type tag immediately preceding (if $k < 0$) or following (if $k > 0$) to t . The case of $k = 0$ would mean t itself, provided that t is also a day of type tag , i.e. $t_0^{tag} = t^{tag}$. Table 3.1 shows each tag and its meaning. Table 3.2 shows some examples of this notation.

Table 3.1: Each tag and its meaning

tag	Meaning
CD	calendar days
IBD	Index Business Day
RD	Roll Day

Table 3.2: Examples of day notation using the tag

Notation	Meaning
t_{-1}^{CD}	means the 1 st calendar day immediately preceding day t
t_{-2}^{IBD}	means the 2 nd Index Business Day immediately preceding day t
t_1^{IBD}	means the 1 st Index Business Day immediately following day t
t_{-1}^{RD}	means the 1 st Roll Day immediately preceding day t

3.5 Constants

The following constants are used in the methodology of the Index. The purpose of this section is to provide a brief summary of each constant. The exact use of these constants is detailed in chapter 3. The value of each constant is specified in chapter 4.

TRACKER_INCEPTION_LEVEL means the inception level of the Tracker Level with regard to the TRACKER_INCEPTION_DATE.

TRACKER_INCEPTION_DATE means the inception date of the Tracker Level.

FUT_POINT_VAL means the value per one point change in the price of the relevant Futures Contract.

ROLL_DATE_OFFSET means an offset in Index Business Days used to determine when the relevant Futures Contract should be rolled relative to the relevant Expiry Date.

ROLL_TC means an embedded transaction cost relating to the roll of the relevant Futures Contract.

AL_INCEPTION_LEVEL means the inception level of the Asset Level.

AL_INCEPTION_DATE means the inception date of the Asset Level.

TRACKER_CAP means a cap in the maximum exposure used when determining the Asset Level.

REBAL_THRESHOLD means a rebalancing threshold used when determining the Asset Level.

λ_{long} means a decay factor used to calculate the long-term historical realised volatility when determining the Asset Level.

λ_{short} means a decay factor used to calculate the short-term historical realised volatility when determining the Asset Level.

TC_REBAL means an embedded transaction cost used when rebalancing the exposure when determining the Asset Level.

REBAL_LAG means a time lag between determining and implementing a rebalancing when determining the Asset Level.

RISK_TARGET means a target level of risk when determining the Asset Level.

INCEPTION_LEVEL means the inception level of the Index with regard to the INCEPTION_DATE.

INCEPTION_DATE means the inception date of the Index.

CCY means the currency of which the Index is denominated.

D means a number of decimals used for rounding purposes.

DVALUE means a minimum precision used for rounding purposes.

IS_TR means a boolean flag specifying whether the Index is a total return index or an excess return index.

INTEREST_RATE_FIXING means the interest rate fixing used when determining the Index Level if applicable.

IR_LAG means a lag between observing the INTEREST_RATE_FIXING and accruing such interest rate if applicable.

IR_DAYCOUNT_DENOMINATOR means a denominator used when calculating an interest rate accrual if applicable.

PROTECTION_FLOOR means the percentage floor that the risk budget algorithm of the Index is protecting for a length of the specified PROTECTION_IBD number of Index Business Days.

PROTECTION_IBD means the protection length in number of Index Business Day.

TERM_CD means the term of each Call Option in calendar days.

STRIKE means a potential base case strike for a Call Option in percentage points.

STRIKE_RANGE means the maximum range in percentage points that may be added to STRIKE when determining the actual strike of a Call Option.

RISK_BUDGET_OBJECTIVE means a risk budget objective, used to determine the available risk budget and potentially the size of the option position of the relevant Call Option purchased.

RISK_BUDGET_THRESHOLD means a risk budget threshold potentially used to determine the size of the option position of the relevant Call Option purchased.

RISK_BUDGET_STEP_UP means a risk budget step up multiplier potentially used to determine the size of the option position of the relevant Call Option purchased.

SELL_BACK_BUFFER means a buffer used to determine how much additional option premium to sell-back when a sell-back is occurring.

VOL_MID means the mid volatility of each Call Option.

SPREAD_BID(t) means the bid side volatility spread embedded transaction cost applied to the sale of each Call Option if applicable, as an addition to the VOL_MID.

SPREAD_OFFER(t) means the offer side volatility spread embedded transaction cost applied to the purchase of each Call Option if applicable, as an addition to the VOL_MID.

FLOOR means a measure of the floor taking into account a potential rounding error determined in accordance with table 4.2.

N_POS means the maximum number of possible Call Options with different characteristics at any point in time determined in accordance with table 4.2.

3.6 Variables

3.6.1 Overview

Each variable describes part of the logic of calculating the Index. The value of each variable with respect to each day t may depend on variables as well as the defined constants. The variables and their dependencies are defined below. The notation in section 3.4.2 is used to refer to specific days in relation to day t .

The variables are separated in a number of different subsections which are organised as follows:

- Subsection 3.6.2 contains variables relating to the final steps of the Index Level calculation, using the contribution from the In Level variables defined in subsection 3.6.5 and the contribution from the Out Level variables defined in subsection 3.6.6.
- Subsection 3.6.3 contains variables relating to determining the maximum loss allowed at a certain point in time, in order to be able to accomplish the Protected Level.
- Subsection 3.6.4 contains variables relating to calendar management, such as day counting.
- Subsection 3.6.5 contains the In Level variables, which are variables relating to calculating the contribution to the Index Level that is not stemming from the outstanding option premium.
- Subsection 3.6.6 contains variables relating to determining the Out Level, which is the contribution to the Index Level stemming from the aggregate outstanding option premium.
- Subsection 3.6.7 contains variables with regard to predicting the Protected Level.
- Subsection 3.6.8 contains variables which are used when the Index is performing a synthetic sell-back of options, i.e. selling options that it already synthetically holds.
- Subsection 3.6.9 contains variables which are used to determine certain parameters of the Call Options.
- Subsection 3.6.10 contains variables with regard to the pricing of the Call Options.
- Subsection 3.6.11 contains variables related to the Asset Level.
- Subsection 3.6.12 contains variables related to the Tracker Level.
- Subsection 3.6.13 contains generic variables.

3.6.2 Index level variables

This section describes variables which are with regard to the final steps of calculating the Index Level. The Index Level with regard to any Index Business Day is made up of two parts: (i) the In Level, which is the contribution to the Index Level which is not stemming from outstanding option premium at such point in time; and (ii) the Out Level, which is the part that is stemming from the aggregate outstanding as option premium at such point in time.

The determination of the In Level is further described in subsection 3.6.5 and the determination of the Out Level is further described in subsection 3.6.6.

Variable 1: $IndexLevel(t)$

$IndexLevel(t)$ is the Index Level of the Index and is calculated with respect to each Index Business Day (subject to the occurrence of Market Disruption Events). The unit of the Index Level is CCY. It is calculated in accordance with:

```

if  $t$  is the INCEPTION_DATE then
|    $IndexLevel(t) =$ 
|      $round(value = IUR(t); d = D; d_{value} = DVALUE)$ 
else
|    $IndexLevel(t) =$ 
|      $round(value = ILG(t); d = D; d_{value} = DVALUE)$ 
where
|    $IUR(t) = IndexLevelUnRounded(t)$ 
|    $ILG(t) = max(ILP(t), IUR(t))$ 
|    $ILP(t) = ILM(t) \times (1 - PROTECTION\_FLOOR)$ 
|    $ILM(t) = max(IL(t - h(t)), IL(t - h(t) + 1), \dots, IL(t - 1))$ 
|    $h(t) = Horizon(t)$ 
|    $IL(k) = IndexLevel(k)$ 

```

Variable 2: $IndexLevelUnRounded(t)$

$IndexLevelUnRounded(t)$ is a fundamental prerequisite for calculating the Index Level and is the sum of the In Level and the Out Level, calculated in accordance with:

$$IndexLevelUnRounded(t) = InLevel(t) + OutLevel(t)$$

Variable 3: $IndexLevelBeforeTodays(t)$

$IndexLevelBeforeTodays(t)$ is a variant of (and may differ from) the Index Level which excludes the impact of a sell-back occurring on t as well as the impact from Option ^{k} having its START ^{k} Day on t itself, calculated in accordance with:

$$IndexLevelBeforeTodays(t) = \\ InLevelBeforeTodays(t) + OutLevelBeforeTodays(t)$$

Variable 4: $IndexLevelBeforeTodaysBid(t)$

$IndexLevelBeforeTodaysBid(t)$ is a variant of (and may differ from) the Index Level which excludes the impact of a sell-back occurring on t as well as the impact from Option ^{k} having its START ^{k} Day on t itself, and which utilises the outstanding option premium on the bid side, calculated in accordance with:

$$IndexLevelBeforeTodaysBid(t) = \\ InLevelBeforeTodays(t) + OutLevelBeforeTodaysBid(t)$$

3.6.3 Max loss allowed variables

This section describes variables which are used to determine the maximum loss allowed on a particular Index Business Day.

Variable 5: *MaxLossAllowedToday(t)*

MaxLossAllowedToday(t) is a measure of the maximum allowed loss, calculated in accordance with:

```
if t is the INCEPTION_DATE then
| MaxLossAllowedToday(t) = 0.0
else if IsSellbackEvent(t) is True then
| MaxLossAllowedToday(t) = MaxLossAllowedTodayBid(t)
else
| MaxLossAllowedToday(t) =
| IndexLevelBeforeTodays(t) – IndexLevelProtectedPredict(t)
```

Variable 6: *MaxLossAllowedTodayBid(t)*

```
if t is the INCEPTION_DATE then
| MaxLossAllowedTodayBid(t) = 0.0
else
| MaxLossAllowedTodayBid(t) =
| IndexLevelBeforeTodaysBid(t) – IndexLevelProtectedPredict(t)
```

Variable 7: *MaxLossAllowedTodayPctOfMax(t)*

MaxLossAllowedTodayPctOfMax(t) means a ratio calculated in accordance with:

$$\text{MaxLossAllowedTodayPctOfMax}(t) = \frac{\text{MaxLossAllowedToday}(t)}{\text{IndexLevelBeforeTodays}(t) \times \text{PROTECTION_FLOOR}}$$

Variable 8: *OutVsAllowedRatio(t)*

OutVsAllowedRatio(t) is a measure of the utilisation of the risk budget, calculated in accordance with:

if $t \leq \text{INCEPTION_DATE}$ then
| $\text{OutVsAllowedRatio}(t) = 0.0$
else
| $\text{OutVsAllowedRatio}(t) = \frac{\text{OutLevelBeforeTodays}(t)}{\text{MaxLossAllowedToday}(t)}$

Variable 9: *BufferOutVsMaxLossAllowed(t)*

BufferOutVsMaxLossAllowed(t) is a measure of the buffer of unutilised risk budget, calculated in accordance with:

$\text{BufferOutVsMaxLossAllowed}(t) =$
 $\text{MaxLossAllowedToday}(t) - \text{OutLevelBeforeTodays}(t)$

3.6.4 Calendar related variables

This section describes variables which are used with respect to calendar management.

Variable 10: $Horizon(t)$

$Horizon(t)$ means the number of Index Business Day from but excluding the INCEPTION_DATE to and including t but capped at PROTECTION_IBD, determined in accordance with:

if t is the INCEPTION_DATE then
 | $Horizon(t) = 0$
 else
 | $Horizon(t) = \min(Horizon(t_{-1}^{IBD}) + 1, PROTECTION_IBD)$

Variable 11: $FirstStartDate^k(t)$

$FirstStartDate^k(t)$ means the first START^k Day on or immediately following INCEPTION_DATE.

Variable 12: $FirstEndDate^k(t)$

$FirstEndDate^k(t)$ means the first END^k Day on or immediately following INCEPTION_DATE.

Variable 13: $OptionExpiryDeltaT^k(t)$

$OptionExpiryDeltaT^k(t)$ measures the fraction of a year remaining for a specific option to its immediately following END^k Day, provided that if the calendar of future holidays is revised, for instance in the case of the introduction of new holidays, historical values of $OptionExpiryDeltaT^k(t)$ prior to the time of the calendar revision, are not themselves revised.

$$OptionExpiryDeltaT^k(t) = \frac{c(t)}{365.2425}$$

where

| $c(t)$ means 0 if t is an END^k Day, or else the number of calendar days from and including t to but excluding the immediately following END^k Day

Variable 14: *OptionNbrStartingToday(t)*

OptionNbrStartingToday(t) measures the Option Identifier of the Call Option that has its START^k Day on t , determined in accordance with

```
if  $t$  is the INCEPTION_DATE then
|  $OptionNbrStartingToday(t) = 0$ 
else
|  $OptionNbrStartingToday(t) = (ONST(t_{-1}^{IBD}) + 1) \text{ mod } N\_POS$ 
| where
|  $ONST(t_{-1}^{IBD}) = OptionNbrStartingToday(t_{-1}^{IBD})$ 
|  $\text{mod}$  means the modulo operator
```

3.6.5 In level variables

This section describes variables relating to the calculation of the In Level.

Variable 15: $InLevel(t)$

$InLevel(t)$ measures the In Level and is calculated by adding an incremental addition (that can be negative) to a previous value, calculated in accordance with:

$$InLevel(t) = previous(t) + \sum_{k=0}^{N_POS-1} OptionIn^k(t) + ir(t)$$

where

if t is the INCEPTION_DATE then $previous(t) = INCEPTION_LEVEL$ $ir(t) = 0.0$
else $previous(t) = InLevel(t_{-1}^{IBD})$ $ir(t) = InterestRate(t) \times IndexLevel(t_{-1}^{IBD})$

Variable 16: $InLevelBeforeToday(t)$

$InLevelBeforeToday(t)$ is an variant of the In Level but which excludes the impact of a sell-back occurring on t as well as the impact from Option^k having its START^k Day on t itself, calculated in accordance with:

$$InLevelBeforeToday(t) = previous(t) + ir(t) + \sum_{\substack{k=0 \\ k \neq OptionNbrStartingToday(t)}}^{N_POS-1} OptionInBeforeToday^k(t)$$

where

if t is the INCEPTION_DATE then $previous(t) = INCEPTION_LEVEL$ $ir(t) = 0.0$
else $previous(t) = InLevel(t_{-1}^{IBD})$ $ir(t) = InterestRate(t) \times IndexLevel(t_{-1}^{IBD})$

Variable 17: $OptionIn^k(t)$

$OptionIn^k(t)$ for $k \in \{0, 1, \dots, N_POS - 1\}$ is calculated in accordance with:

$$OptionIn^k(t) = OptionPosition^k(t) \times OptionOneUnitIn^k(t)$$

Variable 18: $OptionInBeforeToday^k(t)$

$OptionInBeforeToday^k(t)$ for $k \in \{0, 1, \dots, N_POS - 1\}$ is calculated in accordance with:

$$OptionInBeforeToday^k(t) = OptionPosition^k(t) \times OptionOneUnitInBeforeToday^k(t)$$

Variable 19: $OptionOneUnitIn^k(t)$

$OptionOneUnitIn^k(t)$ for $k \in \{0, 1, \dots, N_POS - 1\}$ is calculated in accordance with:

if $OptionSellbackEvent^k(t)$ **is True** **then**
| $OptionOneUnitIn^k(t) = OptionPremiumBid^k(t)$
else if t **is a** $START^k$ **Day** **then**
| $OptionOneUnitIn^k(t) = -OptionPremiumOffer^k(t)$
else
| $OptionOneUnitIn^k(t) = OptionOneUnitInBeforeToday^k(t)$

Variable 20: $OptionOneUnitInBeforeToday^k(t)$

$OptionOneUnitInBeforeToday^k(t)$ for $k \in \{0, 1, \dots, N_POS - 1\}$ is calculated in accordance with:

if $t \geq FirstEndDate^k(t)$ **and** t **is an** END^k **Day** **then**
| $OptionOneUnitInBeforeToday^k(t) = OptionPayoff^k(t)$
else
| $OptionOneUnitInBeforeToday^k(t) = 0.0$

Variable 21: *InterestRate(t)*

InterestRate(t) means an addition from an interest rate, determined in accordance with:

if IS_TR is False then

| $InterestRate(t) = 0.0$

else

| $InterestRate(t) = \max(ir(t_{IR_LAG}^{IBD}), 0) \times \frac{\Delta(t)}{IDD}$

where

| $ir(x)$ means the Relevant Interest Rate, published with respect to x , or if unavailable the first calendar day immediately preceding x for which day the Relevant Interest Rate is available

| $\Delta(t)$ means the number of calendar days from but excluding t_{-1}^{IBD} to and including t

| $IDD = IR_DAYCOUNT_DENOMINATOR$

3.6.6 Out level variables

This section describes variables relating to the Out Level.

Variable 22: *OutLevel(t)*

OutLevel(t) measures the Out Level by calculating the aggregate outstanding option premium in accordance with:

$$OutLevel(t) = \sum_{k=0}^{N_POS-1} OptionOut^k(t)$$

Variable 23: *OutLevelBeforeToday's(t)*

OutLevelBeforeToday's(t) means is a variant of (and may differ from) the Out Level but which excludes the impact of a sell-back occurring on t as well as the impact from $Option^k$ having its $START^k$ Day on t itself, calculated in accordance with:

$$OutLevelBeforeToday's(t) = \sum_{\substack{k=0 \\ k \neq OptionNbrStartingToday(t)}}^{N_POS-1} OptionOutBeforeToday's^k(t)$$

Variable 24: *OptionOut^k(t)*

OptionOut^k(t) for $k \in \{0, 1, \dots, N_POS - 1\}$ is calculated in accordance with:

$$OptionOut^k(t) = OptionPosition^k(t) \times OptionOneUnitOut^k(t)$$

Variable 25: *OutLevelBeforeTodaysBid(t)*

OutLevelBeforeTodaysBid(t) means is a variant of (and may differ from) the Out Level but which excludes the impact of a sell-back occurring on t as well as the impact from Option^k having its START^k Day on t itself and which utilises the outstanding option premium on the bid side, calculated in accordance with:

$$\text{OutLevelBeforeTodaysBid}(t) = \sum_{\substack{k=0 \\ k \neq \text{OptionNbrStartingToday}(t)}}^{\text{N_POS}-1} \text{OptionOutBeforeTodaysBid}^k(t)$$

Variable 26: *OptionOutBeforeTodays^k(t)*

OptionOutBeforeTodays^k(t) for $k \in \{0, 1, \dots, \text{N_POS} - 1\}$ is calculated in accordance with:

$$\text{OptionOutBeforeTodays}^k(t) = \text{OptionPosition}^k(t) \times \text{OptionOneUnitOutBeforeTodays}^k(t)$$

Variable 27: *OptionOutBeforeTodaysBid^k(t)*

OptionOutBeforeTodaysBid^k(t) for $k \in \{0, 1, \dots, \text{N_POS} - 1\}$ is calculated in accordance with:

$$\text{OptionOutBeforeTodaysBid}^k(t) = \text{OptionPosition}^k(t) \times \text{OptionOneUnitOutBeforeTodaysBid}^k(t)$$

Variable 28: *OptionOneUnitOut^k(t)*

OptionOneUnitOut^k(t) for $k \in \{0, 1, \dots, \text{N_POS} - 1\}$ is calculated in accordance with:

if *OptionSellbackEvent^k(t)* **is True** **then**
| *OptionOneUnitOut^k(t)* = 0.0
else
| *OptionOneUnitOut^k(t)* = *OptionOneUnitOutBeforeTodays^k(t)*

Variable 29: *OptionOneUnitOutBeforeTodays^k(t)*

OptionOneUnitOutBeforeTodays^k(t) for $k \in \{0, 1, \dots, N_POS - 1\}$ is calculated in accordance with:

```
if  $t \geq FirstEndDate^k(t)$  and  $t$  is an  $END^k$  Day then
|  $OptionOneUnitOutBeforeTodays^k(t) = 0.0$ 
else if  $t \geq FirstStartDate^k(t)$  then
|  $OptionOneUnitOutBeforeTodays^k(t) = OptionPremiumMid^k(t)$ 
else
|  $OptionOneUnitOutBeforeTodays^k(t) = 0.0$ 
```

Variable 30: *OptionOneUnitOutBeforeTodaysBid^k(t)*

OptionOneUnitOutBeforeTodaysBid^k(t) for $k \in \{0, 1, \dots, N_POS - 1\}$ is calculated in accordance with:

```
if  $t \geq FirstEndDate^k(t)$  and  $t$  is an  $END^k$  Day then
|  $OptionOneUnitOutBeforeTodaysBid^k(t) = 0.0$ 
else if  $t \geq FirstStartDate^k(t)$  then
|  $OptionOneUnitOutBeforeTodaysBid^k(t) =$ 
|  $OptionPremiumBid^k(t)$ 
else
|  $OptionOneUnitOutBeforeTodaysBid^k(t) = 0.0$ 
```

3.6.7 Protected level predictions

This section describes certain calculations with regard to predicting the Protected Level. These protected figures will differ from the actual Protected Level.

Variable 31: $IndexLevelProtectedPredict(t)$

$$IndexLevelProtectedPredict(t) = \\ IndexLevelMaxHorizonPredict(t) \times (1 - FLOOR)$$

Variable 32: $IndexLevelMaxHorizonPredict(t)$

if t is the INCEPTION_DATE then

| $IndexLevelMaxHorizonPredict(t) = INCEPTION_LEVEL$

else

| $IndexLevelMaxHorizonPredict(t) = \\ \max (IUR(t - h(t)), IUR(t - h(t) + 1), \dots, IUR(t - 1); ILBT(t))$

where

| $h(t) = Horizon(t)$

| $IUR(k) = IndexLevelUnRounded(k)$

| $ILBT(t) = IndexLevelBeforeTODays(t)$

3.6.8 Sell-back variables

This section describes variables which are used when the Index is performing a synthetic sell-back of options, i.e. selling options that it already synthetically holds.

Variable 33: *IsSellbackEvent*(*t*)

IsSellbackEvent(*t*) specifies whether a sell-back is occurring with regard to a date *t*, in accordance with:

```

if MaxLossAllowedTodayBid(t) < OutLevelBeforeToday(t) then
  | IsSellbackEvent(t) = True
else
  | IsSellbackEvent(t) = False

```

Variable 34: *SellbackEventPossible*^{*k*}(*t*)

SellbackEventPossible^{*k*}(*t*) for $k \in \{0, 1, \dots, N_POS - 1\}$ describes, with respect to a date *t*, whether it is possible to sell back Option^{*k*}, determined in accordance with:

```

if t is an ENDk Day then
  | SellbackEventPossiblek(t) = False
else if OptionPositionk(t) > 0.0 then
  | SellbackEventPossiblek(t) = True
else
  | SellbackEventPossiblek(t) = False

```

Variable 35: $OptionSellbackEvent^k(t)$

$OptionSellbackEvent^k(t)$ describes, with respect to a date t , whether $Option^k$ is sold back, determined in accordance with:

if $IsSellbackEvent(t)$ *is False* **then**

| $OptionSellbackEvent^k(t) = False$

else

| $OptionSellbackEvent^k(t) = k \in SELLBACK_SET(t)$

| **where**

| $SELLBACK_SET(t)$ means a set of Option Identifiers constructed by adding one Option Identifier at the time from all available Option Identifiers $i \in \{0, 1, \dots, N_POS - 1\}$ in a descending order based on $OptionOutBeforeToday^i(t)$, i.e. starting with the one with the greatest $OptionOutBeforeToday^i(t)$ and considering including option i only if $SellbackEventPossible^i(t)$ is *True*, and increasing the set whilst

$$\sum_{y \in SELLBACK_SET(t)} OptionOutBeforeToday^y(t) \leq ots(t)$$

$$ots(t) = (OutLevelBeforeToday(t) - MaxLossAllowedTodayBid(t)) \times (1 + SELL_BACK_BUFFER)$$

3.6.9 Option parameters determination variables

This section describes variables which are with respect to determining certain parameters of the Call Options.

Variable 36: $Strike^k(t)$

$Strike^k(t)$ for $k \in \{0, 1, \dots, N_POS - 1\}$ means the strike for Option^k with regard to day t and is calculated in accordance with:

```

if  $t < FirstStartDate^k(t)$  then
|    $Strike^k(t) = -1.0$ 
else if  $t$  is a  $START^k$  Day then
|    $Strike^k(t) = \frac{AssetLevel(t) \times (M + R \times mlatpom(t))}{100.0}$ 
|   where
|   |    $M = STRIKE$ 
|   |    $R = STRIKE\_RANGE$ 
|   |   if  $t$  is the INCEPTION_DATE then
|   |   |    $mlatpom(t) = 0.0$ 
|   |   else
|   |   |    $mlatpom(t) =$ 
|   |   |    $1.0 - MaxLossAllowedTodayPctOfMax(t_{-1}^{IBD})$ 
|   else
|   |    $Strike^k(t) = Strike^k(t_{-1}^{IBD})$ 
    
```

Variable 37: $OptionPosition^k(t)$

$OptionPosition^k(t)$ for $k \in \{0, 1, \dots, N_POS - 1\}$ means the synthetic notional position with regard to such Option Identifier k and day t , determined in accordance with:

```

if  $t < FirstStartDate^k(t)$  then
|  $OptionPosition^k(t) = 0.0$ 
else if  $t > FirstStartDate^k(t)$  and  $OptionSellbackEvent^k(t_{-1}^{IBD})$  is
  True and  $t$  is not a  $START^k$  Day then
|  $OptionPosition^k(t) = 0.0$ 
else if  $t$  is a  $START^k$  Day and  $IsSellbackEvent(t)$  is True then
|  $OptionPosition^k(t) = 0.0$ 
else if  $t$  is a  $START^k$  Day then
|  $OptionPosition^k(t) = \min(units_{raw}, units_{cap})$ 
  where
  | if  $OutVsAllowedRatio(t) > RISK\_BUDGET\_OBJECTIVE$ 
  | then
  | |  $factor(t) = 0.0$ 
  | else if
  | |  $OutVsAllowedRatio(t) < RISK\_BUDGET\_THRESHOLD$ 
  | | then
  | | |  $factor(t) = (1 + RISK\_BUDGET\_STEP\_UP \times$ 
  | | |  $(RISK\_BUDGET\_THRESHOLD -$ 
  | | |  $OutVsAllowedRatio(t)))$ 
  | else
  | |  $factor(t) = 1.0$ 
  |
  |  $premium\_to\_spend(t) =$ 
  |  $\max\left(0.0, \frac{BufferOutVsMaxLossAllowed(t) + OutLevelBeforeToday(t)}{PROTECTION\_IBD} \times factor(t)\right)$ 
  |
  |  $units_{raw}(t) = \frac{premium\_to\_spend(t)}{OptionPremiumOffer^k(t)}$ 
  |
  |  $units_{cap}(t) =$ 
  |  $\frac{IndexLevelBeforeToday(t) - IndexLevelProtectedPredict(t) - OutLevelBeforeToday(t)}{OptionPremiumOffer^k(t)}$ 
  |
else if  $t > FirstEndDate^k(t)$  and  $t$  is a  $REMOVE^k$  Day then
|  $OptionPosition^k(t) = 0.0$ 
else
|  $OptionPosition^k(t) = OptionPosition^k(t_{-1}^{IBD})$ 

```

3.6.10 Option pricing variables

This section describes variables which are with respect to the pricing of the Call Options.

Variable 38: $OptionPayoff^k(t)$

$OptionPayoff^k(t)$ for $k \in \{0, 1, \dots, N_POS - 1\}$ measures the payoff of Option^k at date t and is calculated in accordance with:

$$OptionPayoff^k(t) = \max(AssetLevel(t) - Strike^k(t), 0.0)$$

Variable 39: $OptionPremiumOffer^k(t)$

$OptionPremiumOffer^k(t)$ for $k \in \{0, 1, \dots, N_POS - 1\}$ measures the offer price of Option^k at date t and is calculated in accordance with:

$$OptionPremiumOffer^k(t) = \text{black_call_er}(K = Strike^k(t))$$
$$F = AssetLevel(t)$$
$$\sigma = Vol_Offer(t)$$
$$T = OptionExpiryDeltaT^k(t)$$

Variable 40: $OptionPremiumMid^k(t)$

$OptionPremiumMid^k(t)$ for $k \in \{0, 1, \dots, N_POS - 1\}$ for $k \in \{0, 1, \dots, N_POS - 1\}$ measures the mid price of Option^k at date t and is calculated in accordance with:

$$OptionPremiumMid^k(t) = \text{black_call_er}(K = Strike^k(t))$$
$$F = AssetLevel(t)$$
$$\sigma = VOL_MID$$
$$T = OptionExpiryDeltaT^k(t)$$

Variable 41: $OptionPremiumBid^k(t)$

$OptionPremiumBid^k(t)$ for $k \in \{0, 1, \dots, N_POS - 1\}$ measures the bid price of Option^k at date t and is calculated in accordance with:

$$\begin{aligned} OptionPremiumBid^k(t) &= black_call_er(K = Strike^k(t) \\ &F = AssetLevel(t) \\ &\sigma = Vol_Bid(t) \\ &T = OptionExpiryDeltaT^k(t)) \end{aligned}$$

Variable 42: $Vol_Bid(t)$

$Vol_Bid(t)$ means the bid implied volatility with regard to date t , calculated in accordance with:

if then

$$| Vol_Bid(t) = VOL_MID + SPREAD_BID(t)$$

where

| SPREAD_BID(t) means the bid spread figure in the relevant table for the relevant date t

Variable 43: $Vol_Offer(t)$

$Vol_Offer(t)$ means the offer implied volatility with regard to date t , calculated in accordance with:

if then

$$| Vol_Offer(t) = VOL_MID + SPREAD_OFFER(t)$$

where

| SPREAD_OFFER(t) means the offer spread figure in the relevant table for the relevant date t

Variable 44: $black_call_er(K, F, \sigma, T)$

$black_call_er()$ applies Black's option pricing formula in an excess return portfolio, in accordance with:

$$black_call_er(K, F, \sigma, T) = F \times cdf(d_1) - K \times cdf(d_2)$$

where

$$d_1 = \frac{\ln(F/K) + \sigma^2/2 \times T}{\sigma \times \sqrt{T}}$$

$$d_2 = d_1 - \sigma \times \sqrt{T}$$

3.6.11 Asset variables

This section describes the calculation of the Asset Level, which synthetically invests in the underlying Tracker Level (as defined in variable 56) using a risk budgeted approach.

Variable 45: $AssetLevel(t)$

$AssetLevel(t)$ measures the Asset Level, calculated in accordance with:

$$AssetLevel(t) = round(value = AssetLevelUnRounded(t); d = 2)$$

Variable 46: $AssetLevelUnRounded(t)$

$AssetLevelUnRounded(t)$ tracks the net performance, after the deduction of certain transaction costs but before rounding, of synthetically investing in the underlying Tracker Level using a risk budgeted approach, calculated in accordance with:

$$AssetLevelUnRounded(t) = AssetLevelGross(t) - TC(t)$$

Variable 47: $AssetLevelGross(t)$

$AssetLevelGross(t)$ tracks the gross performance, before the deduction of certain transaction costs, of synthetically investing in the underlying Tracker Level using a risk budgeted approach, calculated in accordance with:

```

if  $t$  is the AL_INCEPTION_DATE then
|  $AssetLevelGross(t) = AL\_INCEPTION\_LEVEL$ 
else
|  $AssetLevelGross(t) = AssetLevelUnRounded(t_{-1}^{IBD}) + Return(t)$ 

```

Variable 48: $Return(t)$

$Return(t)$ means the one Index Business Day return in units of CCY, calculated by measuring the corresponding return of the Tracker Level and adjusting for the number of units synthetically invested, in accordance with:

$$Return(t) = UnitsInvested(t_{-1}^{IBD}) \times (TrackerLevel(t) - TrackerLevel(t_{-1}^{IBD}))$$

Variable 49: $TC(t)$

$TC(t)$ means the synthetic transaction cost with regard to changing the number of units synthetically invested in the underlying Tracker Level, calculated in accordance with:

```

if  $t$  is the AL_INCEPTION_DATE then
|  $TC(t) = 0.0$ 
else
|  $TC(t) = ud(t) \times TrackerLevel(t) \times TC\_REBAL$ 
  where
  |  $ud(t) = |UnitsInvested(t) - UnitsInvested(t_{-1}^{IBD})|$ 

```

Variable 50: $ExpVolShort(t)$

$ExpVolShort(t)$ means the exponentially weighted short term volatility calculated in accordance with:

$$ExpVolShort(t) = \text{round} \left(\text{value} = \sqrt{252 \times \sum_{n=-251}^0 w_{exp}(t_n^{IBD}) \times r(t_n^{IBD})^2}; d = 4 \right)$$

where

$$r(t_n^{IBD}) = \ln \left(\frac{TrackerLevel(t_n^{IBD})}{TrackerLevel(t_{n-1}^{IBD})} \right)$$

$$w_{exp}(t_n^{IBD}) = \frac{w_{nom}(t_n^{IBD})}{w_{denom}(t)}$$

where

$$w_{nom}(t_n^{IBD}) = (1 - \lambda_{short}) \times \lambda_{short}^{-n}$$

$$w_{denom}(t) = \sum_{j=-251}^0 w_{nom}(t_j^{IBD})$$

Variable 51: $ExpVolLong(t)$

$ExpVolLong(t)$ means the exponentially weighted long term volatility calculated in accordance with:

$$ExpVolLong(t) = \text{round} \left(\text{value} = \sqrt{252 \times \sum_{n=-251}^0 w_{exp}(t_n^{IBD}) \times r(t_n^{IBD})^2}; d = 4 \right)$$

where

$$\begin{aligned} r(t_n^{IBD}) &= \ln \left(\frac{TrackerLevel(t_n^{IBD})}{TrackerLevel(t_{n-1}^{IBD})} \right) \\ w_{exp}(t_n^{IBD}) &= \frac{w_{nom}(t_n^{IBD})}{w_{denom}(t)} \end{aligned}$$

where

$$\begin{aligned} w_{nom}(t_n^{IBD}) &= (1 - \lambda_{long}) \times \lambda_{long}^{-n} \\ w_{denom}(t) &= \sum_{j=-251}^0 w_{nom}(t_j^{IBD}) \end{aligned}$$

Variable 52: $TargetWeight(t)$

$TargetWeight(t)$ means the target weight to the underlying Tracker Level, calculated in accordance with:

$$TargetWeight(t) = \min \left(\frac{RISK_TARGET}{\max(evs(t), evl(t))}, TRACKER_CAP \right)$$

where

$$\begin{aligned} evs(t) &= ExpVolShort(t_{rl}^{IBD}) \\ evl(t) &= ExpVolLong(t_{rl}^{IBD}) \\ rl &= REBAL_LAG \end{aligned}$$

Variable 53: $Weight(t)$

$Weight(t)$ means the weight to the underlying Tracker Level, calculated in accordance with:

if $DoRebalance(t)$ **is True** **then**
 | $Weight(t) = TargetWeight(t)$
else
 | $Weight(t) = Weight(t_{-1}^{IBD})$

Variable 54: *DoRebalance(t)*

DoRebalance(t) determines whether the weight should be adjusted or not with regard to day *t*, taking into account a rebalancing threshold. It is calculated in accordance with:

```
if t is the AL_INCEPTION_DATE then
| DoRebalance(t) = True
else if |TargetWeight(t) – Weight(t-1IBD)| > REBAL_THRESHOLD
then
| DoRebalance(t) = True
else
| DoRebalance(t) = False
```

Variable 55: *UnitsInvested(t)*

UnitsInvested(t) determines the number of units synthetically invested in the underlying Tracker Level. It is calculated in accordance with:

```
if DoRebalance(t) is True then
|  $UnitsInvested(t) = Weight(t) \times \frac{AssetLevelGross(t)}{TrackerLevel(t)}$ 
else
|  $UnitsInvested(t) = UnitsInvested(t_{-1}^{IBD})$ 
```

3.6.12 Tracker variables

This section describes the variables relating to the calculation of the Tracker Level.

Variable 56: $TrackerLevel(t)$

$TrackerLevel(t)$ tracks the performance of synthetically investing in and rolling certain Futures Contracts and is calculated in accordance with:

$$TrackerLevel(t) = round(value = TrackerLevelUnRounded(t); d = 2)$$

Variable 57: $TrackerLevelUnRounded(t)$

$TrackerLevelUnRounded(t)$ is calculated in accordance with:

$$TrackerLevelUnRounded(t) = TrackerLevelGross(t) - TCR(t)$$

Variable 58: $TrackerLevelGross(t)$

$TrackerLevelGross(t)$ is calculated in accordance with:

if t is the TRACKER_INCEPTION_DATE then
| $TrackerLevelGross(t) = TRACKER_INCEPTION_LEVEL$
else
| $TrackerLevelGross(t) =$
| $TrackerLevelUnRounded(t_{-1}^{RD}) + FutureReturn(t)$

Variable 59: $TCR(t)$

$TCR(t)$ means the synthetic transaction costs of synthetically rolling the First Futures Contract into the Second Futures Contract. It is calculated in accordance with:

```
if  $t$  is the TRACKER_INCEPTION_DATE then
|    $TCR(t) = 0.0$ 
else if  $IsRollDate(t)$  is True then
|    $TCR(t) = (ns(t) + nb(t)) \times FUT\_POINT\_VAL \times ROLL\_TC$ 
|   where
|      $ns(t) = NbrOfFuturesBought(t) \times FLVL\_0(t)$ 
|      $nb(t) = NbrOfFuturesToBuy(t) \times FLVL\_1(t)$ 
else
|    $TCR(t) = 0.0$ 
```

Variable 60: $FLVL_0(t)$

$FLVL_0(t)$ means the official closing price of the First Futures Contract with respect to day t .

Variable 61: $FLVL_1(t)$

$FLVL_1(t)$ means the official closing price of the Second Futures Contract with respect to day t .

Variable 62: $IsRollDate(t)$

$IsRollDate(t)$ checks if t is a Roll Day in accordance with:

```

if  $t$  is a Roll Day then
  |  $IsRollDate(t) = True$ 
else
  |  $IsRollDate(t) = False$ 

```

Variable 63: $FutureLevelBought(t)$

$FutureLevelBought(t)$ means the level at which the relevant Futures Contract was synthetically purchased, with regard to a Roll Day prior to t and determined in accordance with:

$$FutureLevelBought(t) = FLVL_1(t_{-1}^{RD})$$

Variable 64: $FutureRefLevel(t)$

$FutureRefLevel(t)$ means the reference price for the relevant Futures Contract given by:

```

if  $t$  is a 2nd Future Used Day then
  |  $FutureRefLevel(t) = FLVL\_1(t)$ 
else
  |  $FutureRefLevel(t) = FLVL\_0(t)$ 

```

Variable 65: $NbrOfFuturesToBuy(t)$

$NbrOfFuturesToBuy(t)$ means the number of futures to synthetically buy at day t and is calculated in accordance with:

```

if  $t$  is the TRACKER_INCEPTION_DATE then
  |  $NbrOfFuturesToBuy(t) = \frac{TRACKER\_INCEPTION\_LEVEL}{FUT\_POINT\_VAL \times FLVL\_1(t)}$ 
else
  |  $NbrOfFuturesToBuy(t) = \frac{TrackerLevelGross(t)}{FUT\_POINT\_VAL \times FLVL\_1(t)}$ 

```

Variable 66: $NbrOfFuturesBought(t)$

$NbrOfFuturesBought(t)$ means the number of futures synthetically bought at the Roll Day immediately preceding day t . It is given by:

$$NbrOfFuturesBought(t) = NbrOfFuturesToBuy(t_{-1}^{RD})$$

Variable 67: $FutureReturn(t)$

$FutureReturn(t)$ means, with respect to day t , the return in units of CCY of the relevant Futures Contract since the Roll Day immediately preceding day t and adjusted for the relevant number of notional units and the relevant multiplier. It is calculated in accordance with:

$$FutureReturn(t) = units(t) \times \Delta_{price}(t) \times FUT_POINT_VAL$$

where

$$\begin{cases} units(t) = NbrOfFuturesBought(t) \\ \Delta_{price}(t) = FutureRefLevel(t) - FutureLevelBought(t) \end{cases}$$

3.6.13 Generic variables

This section describes generic variables.

Variable 68: $round(value; d; d_{value})$

$round(value; d; d_{value})$ rounds $value$ to d digits after the decimal point if the parameter d_{value} is not specified. If d_{value} is specified, $value$ will be rounded to k digits after the decimal point

where

| $k = round_dec_req(value = value, d = D; d_{value} = DVALUE)$

Variable 69: $round_dec_req(value; d; d_{value})$

$round_dec_req(value; d; d_{value})$ specifies the number of decimals required in accordance with the following logic: If d_{value} is not specified, $round_dec_req()$ will be equal to d . If d_{value} is specified, $round_dec_req()$ will be the lowest integer k that is greater or equal to d that satisfies $10^{-k}/value \leq d_{value}$.

Variable 70: $ln(x)$

$ln(x)$ means the natural logarithm.

Variable 71: $cdf(x)$

$cdf(x)$ means the cumulative distribution function of the standard normal distribution, defined as:

$$cdf(x) = \int_{-\infty}^x \frac{1}{\sqrt{2\pi}} e^{-\frac{y^2}{2}} dy$$

3.7 Consequences of Disrupted Days

Upon the occurrence of a Disrupted Day the Index Administrator may, but shall not be obligated to:

- a) delay or postpone the determination of any variable or component of the Index; *and/or*
- b) use an estimate for the level of the relevant Reference Index; *and/or*
- c) disregard such event and determine that such day (for example) is not deemed a Disrupted Day; *and/or*
- d) not publish the Index Level for such Index Business Day or delay such publication; *and/or*
- e) determine that no Call Option is synthetically bought or sold on such day; *and/or*
- f) make such other or further adjustments to the Index as it considers appropriate to take such events into account; *and/or*
- g) permanently cancel the Index.

The Index Administrator will be guided by the aims listed in section 6 and shall be acting in accordance with its standard in section 1.3.1.

4 Index Specifics

4.1 Overview

This chapter describes the specific attributes with respect to each Foxberry Floored Beta index. This section may be updated from time to time. In particular, it is expected that $SPREAD_BID(t)$ as well as $SPREAD_OFFER(t)$ may be updated from time to time to reflect changes in market conditions such as the cost of hedging, where any updates will be documented in the latest version of this document. Such changes will be performed by the Index Administrator, acting under the framework of chapter 6 and according to the standards in section 1.3.1.

4.2 Index specific constants

Table 4.1 details the default values of the constants which are in place unless otherwise specified in the relevant section of this chapter 4. In addition, the derived constants in table 4.2 are defined, where $\lfloor x \rfloor$ means the mathematical floor function of x .

Table 4.1: Default constants for all indices in chapter 4

Name	Value
TRACKER_INCEPTION_LEVEL	1000.00
ROLL_DATE_OFFSET	-2
AL_INCEPTION_LEVEL	1000.00
TRACKER_CAP	1.5
REBAL_THRESHOLD	0.01
λ_{long}	0.97
λ_{short}	0.94
REBAL_LAG	-1
RISK_TARGET	0.15
INCEPTION_LEVEL	100.00
D	2
DVALUE	0.0001
STRIKE	90
STRIKE_RANGE	15
RISK_BUDGET_OBJECTIVE	0.9
RISK_BUDGET_THRESHOLD	0.7
RISK_BUDGET_STEP_UP	25
SELL_BACK_BUFFER	0.15
VOL_MID	0.15
PROTECTION_IBD	263
TERM_CD	183

Table 4.2: Derived constants

Name	Value
FLOOR	$\text{PROTECTION_FLOOR} - \frac{3}{2} \times \text{DVALUE}$
N_POS	$\text{TERM_CD} - 2 \times \lfloor \text{TERM_CD}/7 \rfloor + 1$

4.3 US Large Cap

The following definitions are defined for all indices falling under section 4.3.

Additional Holiday Not applicable.

Exchange means the Chicago Mercantile Exchange or any successor thereto.

Exchange Symbol means the root symbol ES, except with respect to Futures Contracts with an Expiry Date falling on or prior to the 20 March 1998, in which case it means the root symbol SP.

Expiry Months means the months March, June, September and December.

Expiry Date means, with regard to the Expiry Months, the Scheduled Trading Day which is considered to be the standard expiry for Futures Contract in such month, or the immediately preceding Scheduled Trading Day if such day is not a Scheduled Trading Day unless otherwise specified by the Exchange. The Expiry Date as of the construction of these Index Rules is the third Friday of each month of the Expiry Months if such day is a Scheduled Trading Day.

Underlying Market means a market capitalisation based selection of 500 large cap stocks, all of which are listed on US stock exchanges, as detailed in the index description of the Reference Index which is publicly available.

Table 4.3: Constants in common for all indices in 4.3

Name	Value
CCY	USD
INCEPTION_DATE	15 June 1984
INTEREST_RATE_FIXING	FEDL01
IR_LAG	-1
IR_DAYCOUNT_DENOMINATOR	360
AL_INCEPTION_DATE	15 June 1984
TC_REBAL	0.0003
TRACKER_INCEPTION_DATE	15 June 1983
FUT_POINT_VAL ¹	50
ROLL_TC	0.00015

¹with respect to Futures Contracts with an Expiry Date falling on or prior to the 20 March 1998, FUT_POINT_VAL shall have the value 250.

4.3.1 US Large Cap @80% TR

Index Name means Foxberry Floored Beta US Large Cap @80% TR Index.

Index Calculator means Solactive AG.

Live Calculation Date means the 29 December 2016.

Live Methodology Date means the 28 November 2016.

Bloomberg Ticker means FXBYFBUS <Index>.

Reuters RIC means .FXBYFBUS.

WKN means SLA2VG.

ISIN means DE000SLA2VG2.

Table 4.4: Constants for 4.3.1

Name	Value
PROTECTION_FLOOR	0.20
IS_TR	<i>True</i>

Table 4.5: Spreads for different periods with respect to 4.3.1

Period	SPREAD_BID(<i>t</i>)	SPREAD_OFFER(<i>t</i>)
INCEPTION_DATE → ongoing	-0.0125	0.0125

4.4 EU Large Cap

The following definitions are defined for all indices falling under section 4.4.

Additional Holiday Not applicable.

Exchange means the Eurex or any successor thereto.

Exchange Symbol means the root symbol FESX.

Expiry Months means the months March, June, September and December.

Expiry Date means, with regard to the Expiry Months, the Scheduled Trading Day which is considered to be the standard expiry for Futures Contract in such month, or the immediately preceding Scheduled Trading Day if such day is not a Scheduled Trading Day unless otherwise specified by the Exchange. The Expiry Date as of the construction of these Index Rules is the third Friday of each month of the Expiry Months if such day is a Scheduled Trading Day.

Underlying Market means a market capitalisation based selection of 50 large, blue-chip European companies operating within eurozone nations, as detailed in the index description of the Reference Index which is publicly available.

Table 4.6: Constants in common for all indices in 4.4

Name	Value
CCY	EUR
INCEPTION_DATE	17 September 1999
INTEREST_RATE_FIXING	EONIA
IR_LAG	-1
IR_DAYCOUNT_DENOMINATOR	360
AL_INCEPTION_DATE	17 September 1999
TC_REBAL	0.0005
TRACKER_INCEPTION_DATE	16 September 1998
FUT_POINT_VAL	10
ROLL_TC	0.00025

4.4.1 EU Large Cap @80% TR

Index Name means Foxberry Floored Beta EU Large Cap @80% TR Index.

Index Calculator means Solactive AG.

Live Calculation Date means the 29 December 2016.

Live Methodology Date means the 28 November 2016.

Bloomberg Ticker means FXBYFBEU <Index>.

Reuters RIC means .FXBYFBEU.

WKN means SLA2VJ.

ISIN means DE000SLA2VJ6.

Table 4.7: Constants for 4.4.1

Name	Value
PROTECTION_FLOOR	0.20
IS_TR	<i>True</i>

Table 4.8: Spreads for different periods with respect to 4.4.1

Period	SPREAD_BID(t)	SPREAD_OFFER(t)
INCEPTION_DATE → ongoing	-0.02	0.02

4.5 Germany Large Cap

The following definitions are defined for all indices falling under section 4.5. With regard to all subsections to section 4.5, any reference to the EUR currency with regard to any date prior to the introduction of the EUR currency shall mean the Deutsche Mark.

Additional Holiday With regard to any year 2016 and onwards: Whit Monday and Unification Day (03 October).

Exchange means the Eurex or any successor thereto.

Exchange Symbol means the root symbol FDAX.

Expiry Months means the months March, June, September and December.

Expiry Date means, with regard to the Expiry Months, the Scheduled Trading Day which is considered to be the standard expiry for Futures Contract in such month, or the immediately preceding Scheduled Trading Day if such day is not a Scheduled Trading Day unless otherwise specified by the Exchange. The Expiry Date as of the construction of these Index Rules is the third Friday of each month of the Expiry Months if such day is a Scheduled Trading Day.

Underlying Market means a selection of 30 of the largest and most liquid German companies that trade on the Frankfurt Stock Exchange, as detailed in the index description of the Reference Index which is publicly available.

Table 4.9: Constants in common for all indices in 4.5

Name	Value
CCY	EUR
INCEPTION_DATE	2 January 1992
INTEREST_RATE_FIXING	EONIADE
IR_LAG	-1
IR_DAYCOUNT_DENOMINATOR	360
AL_INCEPTION_DATE	2 January 1992
TC_REBAL	0.0003
TRACKER_INCEPTION_DATE	19 December 1990
FUT_POINT_VAL	25
ROLL_TC	0.00015

4.5.1 Germany 30 @80% TR

Index Name means Foxberry Floored Beta Germany Large Cap @80% TR Index.

Index Calculator means Solactive AG.

Live Calculation Date means the 29 December 2016.

Live Methodology Date means the 28 November 2016.

Bloomberg Ticker means FXBYFBDE <Index>.

Reuters RIC means .FXBYFBDE.

WKN means SLA2VK.

ISIN means DE000SLA2VK4.

Table 4.10: Constants for 4.5.1

Name	Value
PROTECTION_FLOOR	0.20
IS_TR	<i>True</i>

Table 4.11: Spreads for different periods with respect to 4.5.1

Period	SPREAD_BID(<i>t</i>)	SPREAD_OFFER(<i>t</i>)
INCEPTION_DATE → ongoing	-0.02	0.02

4.6 Sweden

The following definitions are defined for all indices falling under section 4.6.

Additional Holiday Not applicable.

Exchange means the Nasdaq OMX or any successor thereto.

Exchange Symbol means the root symbol OMXS30.

Expiry Months means the months January, February, March, April, May, June, July, August, September, October, November and December.

Expiry Date means, with regard to the Expiry Months, the Scheduled Trading Day which is considered to be the standard expiry for Futures Contract in such month, or the immediately preceding Scheduled Trading Day if such day is not a Scheduled Trading Day unless otherwise specified by the Exchange. The Expiry Date as of the construction of these Index Rules is the third Friday of each month of the Expiry Months if such day is a Scheduled Trading Day.

Underlying Market means a selection of 30 stocks trading on the Stockholm Stock Exchange, as detailed in the index description of the Reference Index which is publicly available.

Table 4.12: Constants in common for all indices in 4.6

Name	Value
CCY	SEK
INCEPTION_DATE	20 December 1999
INTEREST_RATE_FIXING	STIB1D
IR_LAG	-1
IR_DAYCOUNT_DENOMINATOR	360
AL_INCEPTION_DATE	20 December 1999
TC_REBAL	0.001
TRACKER_INCEPTION_DATE	16 December 1998
FUT_POINT_VAL	100
ROLL_TC	0.0005

4.6.1 Sweden @80% TR

Index Name means Foxberry Floored Beta Sweden @80% TR Index.

Index Calculator means Solactive AG.

Live Calculation Date means the 24 May 2017.

Live Methodology Date means the 28 November 2016.

Bloomberg Ticker means FXBYFBSE <Index>.

Reuters RIC means .FXBYFBSE.

WKN means SLA3C4.

ISIN means DE000SLA3C40.

Table 4.13: Constants for 4.6.1

Name	Value
PROTECTION_FLOOR	0.20
IS_TR	<i>True</i>

Table 4.14: Spreads for different periods with respect to 4.6.1

Period	SPREAD_BID(<i>t</i>)	SPREAD_OFFER(<i>t</i>)
INCEPTION_DATE → ongoing	-0.0225	0.0225

4.7 Emerging Markets

The following definitions are defined for all indices falling under section 4.7.

Additional Holiday means each day when one of the following US holidays is observed: Martin Luther King Jr. Day, President's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving

Exchange means the ICE or any successor thereto.

Exchange Symbol means the root symbol MME.

Expiry Months means the months March, June, September and December.

Expiry Date means, with regard to the Expiry Months, the Scheduled Trading Day which is considered to be the standard expiry for Futures Contract in such month, or the immediately preceding Scheduled Trading Day if such day is not a Scheduled Trading Day unless otherwise specified by the Exchange. The Expiry Date as of the construction of these Index Rules is the third Friday of each month of the Expiry Months if such day is a Scheduled Trading Day.

Underlying Market means an internationally diversified selection of stocks of large and mid-sized companies in emerging economies, as detailed in the index description of the Reference Index which is publicly available.

Table 4.15: Constants in common for all indices in 4.7

Name	Value
CCY	USD
INCEPTION_DATE	13 June 2012
INTEREST_RATE_FIXING	FEDL01
IR_LAG	-1
IR_DAYCOUNT_DENOMINATOR	360
AL_INCEPTION_DATE	13 June 2012
TC_REBAL	0.001
TRACKER_INCEPTION_DATE	15 December 2010
FUT_POINT_VAL	50
ROLL_TC	0.00025

4.7.1 Emerging Markets @80% TR

Index Name means Foxberry Floored Beta Emerging Markets @80% TR Index.

Index Calculator means Solactive AG.

Live Calculation Date means the 29 December 2016.

Live Methodology Date means the 28 November 2016.

Bloomberg Ticker means FXBYFBEM <Index>.

Reuters RIC means .FXBYFBEM.

WKN means SLA2VH.

ISIN means DE000SLA2VH0.

Table 4.16: Constants for 4.7.1

Name	Value
PROTECTION_FLOOR	0.20
IS_TR	<i>True</i>

Table 4.17: Spreads for different periods with respect to 4.7.1

Period	SPREAD_BID(<i>t</i>)	SPREAD_OFFER(<i>t</i>)
INCEPTION_DATE → ongoing	-0.015	0.015

5 Extraordinary Events

This is a chapter regarding extraordinary events (each an “**Extraordinary Event**”).

5.1 Successor Futures Contract

If any Futures Contract is: (i) not calculated and quoted by the Exchange but by a successor exchange acceptable to the Index Administrator; or (ii) replaced by a successor futures contract using, in the determination of the Index Administrator, the same or substantially similar formula and method of calculation as used in the calculation of the relevant Futures Contract, then in each case that successor futures contract (the “**Successor Futures Contract**”) shall replace the relevant Futures Contract with effect from a date determined by the Index Administrator who may make such adjustment to these Index Rules, as it determines in good faith is appropriate, to account for such change.

5.2 Material change to Futures Contracts

Without prejudice to the ability of the Index Administrator to amend the Index Rules (see Section 1.1.1), the Index Administrator may, acting in good faith and in a commercially reasonable manner: (i) exclude; or (ii) substitute, any Futures Contract following the occurrence (and/or continuation) of a Change in Law or in circumstances where it considers it reasonably necessary to do so to reflect the intention of the Tracker Level, including (without prejudice to the generality of the foregoing) changes announced by the Exchange relating to the modification, exclusion, inclusion or substitution of any one Futures Contract or any perception among market participants generally that the published price of the relevant Futures Contract is inaccurate (and the Exchange fails to correct such level), and if it so excludes or substitutes for any Futures Contract, then the Index Administrator may adjust the Index Rules as it determines in good faith to be appropriate to account for such exclusion or substitution on such date(s) selected by the Index Administrator.

The Index Administrator is under no obligation to continue the calculation and publication of any Tracker Level upon the occurrence or existence of a Change in Law; and the Index Administrator may decide to cancel any Tracker Level if it determines, acting in good faith, that the objective of the relevant Tracker Level can no longer be achieved.

5.3 Cancellation of licence or permission

If, in respect of an Index, at any time, any licence granted (if required) to the Index Administrator (or its affiliates) to use any referenced index or other component (“**Affected Component**”) for the purposes of the Index terminates, or the Index Administrator’s rights to use such component for the purpose of the Index is otherwise disputed, impaired or ceases (for any reason), the Index Administrator may remove such Affected Component from the Index and may adjust the Index Rules as it determines in good faith to be appropriate to account for such change(s) including, without limitation, selecting: (i) a replacement component having similar characteristics to the Affected Component; and (ii) the date of such replacement on such dates as selected by the Index Administrator or cease publication of and/or terminate the affected Index.

5.4 Cancellation or non-publication

If, at any time, the Exchange: (i) announces that it will make a material change in the definition of any Futures Contract or in any other way materially modifies such contract (other than a modification prescribed in the definition of such contract); or (ii) permanently cancels any Futures Contract and no Successor Futures Contract exists; or (iii) is otherwise unable or unwilling to publish levels of the Futures Contract, then the Index Administrator may remove such Futures Contract from the Tracker Level and may adjust the Index Rules as it determines in good faith to be appropriate to account for such change(s) (including, without limitation, selecting: (I) a replacement underlying futures contract traded on an equivalent exchange and having similar characteristics to the Affected Component; and (II) the date of such replacement) on such date(s) as selected by the Index Administrator.

6 Governance

6.1 Index Committee

The Foxberry Index Committee (the “**Index Committee**”) is the body responsible for the overall governance of the Index. The Index Committee shall make any determinations necessary with regard to Disruption Events, Market Disruption Events, Extraordinary Events, amendments, errors and omissions.

When overseeing the governance of the Index, the Index Committee will take into account the following aims:

- Maintaining the investability of the Index;
- Ensuring continued integrity of the Index; *and*
- Ensuring a fair outcome for investors.

Information about changes to indices and related matters are considered to be potentially market moving and material. Therefore, all Index Committee discussions are confidential.

7 Third Party Trademarks

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Foxberry is not affiliated with any of the companies listed above.

8 Risk Factors

Potential risks of the Foxberry Floored Beta Index and any variations thereof (each the "Index" or the "Foxberry Index") include:

Limited operating history and backtesting: the Index has only recently been established as an investable index and therefore has limited data on which to evaluate its long-term historical performance. Any backtesting or analysis which has been used in this document must be considered illustrative only and may be based on estimates and assumptions (including the level of embedded transaction costs) that are not used in the actual Index.

Backtesting: Backtesting analysis is for illustrative purposes only. Foxberry provides no assurance or guarantee that the Index will operate or would have operated in the past in a manner consistent with the provided backtesting analysis. Backtested and/or past performance figures are not a reliable indicator of future results. The hypothetical historical performance (if any) of the Index during certain periods may be based on certain assumptions, methodologies and/or data sources, and the use of alternative assumptions, methodologies and/or data sources for such periods may result in materially different hypothetical performance. The backtested period is using certain assumptions on the historical embedded transaction costs. Please refer to the section "Estimated transaction costs" for further details.

Index objectives: Other than explicitly stated assurances, there can be no assurance that the Index will achieve any stated return or risk objective. The Index has been constructed based on certain assumptions (including observations, empirical trends and correlations) which may not be realised in the future. This may affect the performance of the Index (and any transaction linked to the Index) adversely.

No credit guarantee: Any reference to "guarantee" or "protection" in this document refers to the mechanism in which the Index has a level which is protected, for a period of time, through the means of the index methodology. As an Index is a mathematical construction, there is no further credit guarantee from Foxberry. In addition, the protected level does not take into account any credit risk that may arise from any transaction referencing the Index. Always review all documentation and take independent advice prior to entering into a transaction.

Adjustments to the Index: Foxberry may make adjustments and amendments to the Index to, among other things, reflect changes in law, regulation or regulatory policy, to maintain the investability of the index or to address any ambiguities. Such changes may reflect the performance of the Index and any related transactions negatively.

No reliance on risk management techniques: the Index entails certain risk management and diversification techniques with the aim of managing the risk inside the Index. Other than explicitly stated assurances, there can be no assurances that these techniques will be successful in reducing the risk of the Index or prevent adverse scenarios. The techniques may also be a source of negative performance compared to a hypothetical Index without such techniques. No assurance can be given that the investment strategy used to construct the index will outperform any alternative basket or strategy that may be constructed from the relevant futures contracts.

Variable exposure: the Index entails certain risk management and diversification techniques with the aim of managing the risk inside the Index. This may lead to decreased exposure following a drawdown or heightened volatility in the underlying markets. If this is followed by positive market performance, the Index may underperform. Conversely, if the volatility is low, the Index may take additional market exposure. If this is followed by negative market performance, the Index may underperform. In addition, the number of options purchased will depend on the constraints of the risk budgeting algorithm. The performance of the Index can therefore be substantially different than the underlying futures contracts.

Embedded optionality and negative time decay: The index synthetically enters into options. Options have a convexity, meaning that the performance of the Index can not be expected to be linear with the underlying futures contracts. In addition, options have a negative time decay, meaning that all else equal they are expected to lose value over time.

Extraordinary and Force Majeure events: It should be noted that the Index may be subject to certain extraordinary and force majeure events, including, but not limited to, any modification to the Index or cancellation of the publication of the Index Level, or any elimination, conversion, redenomination or exchange of any constituent or component of the Index, the consequences which may have a negative impact upon the performance of the Index.

Index hedging: Depending on the size of total investments in the Index and the liquidity of the underlying hedging instruments, it is possible that such transactions may adversely affect the performance of the Index.

Liquidity risk: There is no public market for OTC derivative transactions and therefore it may be difficult or impossible to liquidate an existing position on favourable terms. An investor must be prepared to hold any transaction until maturity. Foxberry will not make a market in any transaction.

This is not an exhaustive set of risks: The risks stated in this

document is not an exhaustive set of risks. Independent due diligence should be undertaken and advice sought if appropriate to understand the risks and suitability of the Index and any related transactions. Always refer to the full documentation of the Index and any related transaction.

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Variable transaction costs: The transaction costs in the Index are subject to change and may be updated from time to time to reflect amongst other things the market environment and index allocation.

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