Nomura Interest Rate Swaps Value Daily Index

Index Rulebook

Strictly Private and Confidential

3 December 2019

Summary Description	Each of the Nomura Interest Rate Swaps Value Indices (each an "Index") is a quantitative, rules-based Index that seeks to achieve returns based on a "value" investment strategy from a selection of eligible hypothetical interest rate swap forwards in each of 4 different currencies and with each of 4 different tenors (the "Index Components"). The basic principle of a value investment strategy is to buy assets that are determined to be relatively cheap, or "undervalued," and to sell assets that are determined to be relatively expensive, or "overvalued." The "value signal" is determined on a daily basis by measuring the "carry" of each Index Component and comparing it to its historical average and volatility. For interest rate swap forwards, carry is the expected return from holding a long position in interest rate swap forward under the assumption that the spot rate does not change. When the interest rate curve is "normal" (meaning that long-term interest rates are higher than short-term interest rates), holding a long position in interest rate swap forward can generate positive carry. The Index then takes notional long positions in the Index components with the two highest value signals (i.e., the two most undervalued Index components based on the Index's strategy) and takes notional short positions in the Index components with the two lowest value signals (i.e., the two most overvalued Index components based on the Index's strategy). The magnitude of each notional long or short position taken by the index is further adjusted based on a daily "duration-scaling" mechanism that seeks to achieve a balanced level of risk in the index's exposure to each of the index components, and by a weekly "volatility-scaling" mechanism that seeks to achieve a targeted level of volatility in the aggregate exposure to the index components as a whole. Each Index was created by Nomura International plc, the Index sponsor and Index calculation agent. The Indices are published on Bloomberg under the ticker symbol "NMRSVD3U Index" (Nomura Interest Rate Swaps Value Daily Index with 3% target vol in USD), "NMRSVD3Y Index" (Nomura Interest Rate Swaps Value Daily Index with 3% target vol in JPY), "NMRSVD9U Index" (Nomura Interest Rate Swaps Value Daily Index with 9% target vol in USD) and "NMRSVD0U Index" (Nomura Interest Rate Swaps Value Daily Index with 10% target vol in USD). Prior to the Live Date, the Index sponsor reconstructed each Index using backtested data from 12 January 1990 (the "Index Base Date"). As of the Index Base Date, the Index Level was 100. The level of NMRSVD3U Index, NMRSVD9U Index and NMRSVD0U Index is denominated in US Dollars and the level of NMRSVD3Y Index is denominated in Japanese Yen. Please refer to Appendices A and C for backtesting assumptions. The Live Date of NMRSVD3U Index is 11 January 2016. The Live Date of NMRSVD9U Index is 01 February 2016. The Live Date of NMRSVD0U Index is 01 February 2016. The Live Date of NMRSVD3Y Index is 11 January 2016. For further information please see the Index summary disclosures document for this Index, which is to be read in conjunction with this Index Rulebook (together, the "Index Description").
Index	An index built using the methodology described in this Rulebook denominated in the relevant currency "CCY" and targeting a vol level of "Target Vol"
Index Sponsor	Nomura International plc ("NIP"), who is responsible for the administration of the Index.
Index Level	In respect of an Index Business Day t, the calculated level of the Index in respect of that day, denoted Index(t) and published on the relevant Bloomberg page or any successor thereto. Please refer to Appendix A for a list of the relevant Bloomberg pages for the different variations.
Index	The Index Level on the Index Base Date shall be equal to 100. For any Index Business Day t thereafter the Index Level shall be determined as follows: $\text{Index}(t)=\text{Index}(t-1)\times\left[1+\frac{FX_{CCY/USD}(t-1)}{FX_{CCY/USD}(t)}\times\left(\sum_{\substack{t-1<l\le t \\ \text{For any London Business Day } l}}\left\{\sum_{k=1}^{4}\text{Country Ret}^{k}(l)\right\}\right)\right]$

	Where: k=1,2,3,4 respectively for USD,EUR,GBP and JPY if l is not a Local^k Business Day then : Country Ret^k(l)=0
$FX_{CCY/USD}$	For any Index Business Day t, $FX_{CCY/USD}$ refers to the foreign exchange Spot Rate (quoted as the number of USD per 1 unit of foreign currency CCY) as determined by the Index Sponsor using the relevant Price Source as set out in Appendix A. For the avoidance of doubt if CCY=USD then $FX_{CCY/USD}(t)=1$ for any Index Business Day t. Please refer to Appendix A for Data Source and backtesting assumptions.
CCY	Means the currency in which the Index is denominated
Country Ret^k	For any London and Local^k Business Day t: $\text{Country Ret}^k(t)=\left[\left\{\sum_{i=1}^{4}\text{Ins Ret}_i^k(t)\right\}\times\text{Port Vol Scale}(t-1)-TC_i^k(t-1)\right]\times\frac{FX^k(t)}{FX^k(t-1)}$ Where: i=1,2,3,4,respectively for 5y,10y,20y and 30y
Local^k Business Day	*Prior to the BD Modification Date* Means the local calendar for currency k: For k=1 Local^k=New York Business Day For k=2 Local^k=TARGET Business Day For k=3 Local^k=London Business Day For k=4 Local^k=Tokyo Business Day *From and including the BD Modification Date* means the local calendar for currency k: for k=1 Local^k= any day which is a New York Business Day and CME Business Day, excluding 24-December and 31-December; for k=2 Local^k= any day which is a TARGET Business Day, a Eurex Business Day and an ICE Futures Europe (EU) Business Day, excluding 24-December and 31-December; for k=3 Local^k= any day which is a London Business Day and an ICE Futures Europe (UK) Business Day, excluding 24-December and 31-December; and for k=4 Local^k= any day which is a Tokyo Business Day, a Tokyo Financial Exchange Business Day and an Osaka Exchange Business Day, excluding 24-December and 31-December.
FX^k	For any London and Local^k Business Day t, FX^k refers to the foreign exchange Spot Rate (quoted as the number of USD per 1 unit of foreign currency k) as determined by the Index Sponsor using the relevant Price Source as set out in Appendix A. For the avoidance of doubt if k=1 then $FX^k(t)=1$ for any London and Local^k Business Day t. Please refer to Appendix A for data source and backtesting assumptions.
Ins Ret$_i^k$	For any London and Local^k Business Day t: $\text{Ins Ret}_i^k(t)=\frac{1}{20}\sum_{p=1}^{20}\left(-\left[\text{Swap rate}_{FWD,\,i}^{k,\,p}(t)-\text{Swap rate}_{FWD,\,i}^{k,\,p}(t-1)\right]\times\frac{PV01_{FWD,\,i}^{k,\,p}(t)}{PV01_{FWD,\,i}^{k,\,p}(t-1)}\right)\times\text{Signal}_i^{k,\,p}(t)$ For the avoidance of doubt, $\text{Swap rate}_{FWD,\,i}^{k,\,p}(t)$ and $\text{Swap rate}_{FWD,\,i}^{k,\,p}(t-1)$ are both related to the same Forward $\text{Swap}_i^{k,\,p}$ defined as of the current day t. Similarly, $PV01_{FWD,\,i}^{k,\,p}(t)$ and $PV01_{FWD,\,i}^{k,\,p}(t-1)$ are both related to the same Forward $\text{Swap}_i^{k,\,p}$ defined as of the current day t.
Forward Swap$_i^{k,\,p}$	A swap transaction with a maturity equal to tenor i and in the currency k, following the standard swap conventions for this tenor and currency, with an effective date on the Spot Date immediately following (20-p) Trading Business Days after day t. For the avoidance of doubt: For k=1,2,3,4 currency k means respectively USD,EUR,GBP,JPY

	For i=1,2,3,4 tenor i means respectively 5y,10y,20y,30y Please refer to Appendix B for a list of the standard swap conventions in respect of the relevant currency k and tenor i.
Spot Date	The swap spot date as defined by the standard swap convention for the relevant currency of the swap transaction. Please refer to Appendix B for a list of the standard swap conventions in respect of the relevant currency k and tenor i.
Swap rate$^{k,p}_{FWD,i}$	For any Index Business Day t, the mid-market forward rate (quoted in percentage points) for the Forward Swap, as of London Time on such Day, as determined using the processes and price sources specified in the Yield Curve methodology. Please refer to Appendix B for a list of the standard swap conventions for different currencies and tenors.
Yield Curve	Yield Curve means, in respect of each Index and Index Business Day, the relevant Yield Curve (as defined in the NIP Indices Yield Curve Process document dated July 2017 (as amended and/or supplemented from time to time and published on the Nomura QIS Website) in respect of such Index and Index Business Day. The Yield Curve is built using the interest rate curve determined and used by Nomura International plc in the ordinary course of its business as a dealer/market maker and for the purposes of its own audited books and records and certain other data, for more information please see the NIP Indices Yield Curve Process.
PV01$^{k,p}_{FWD,i}$	For any Index Business Day t, the sensitivity of the Forward Swap present value to a change of 0.01% in the coupon for a swap notional of 1 as of London Time on such Day, as determined using the processes and price sources specified in the Yield Curve methodology. Please refer to Appendix B for a list of the standard swap conventions for different currencies and tenors
Signal$^{k,p}_{i}$	Each Index takes notional long positions in the 2 Index components with the highest value signals and takes notional short positions in the 2 Index components with the lowest value signals. Signal$^{k,p}_{i}$ is determined on a daily basis and can take 3 values: Long (1), Neutral (0) and Short (-1) and refers to the position in the currency k and the tenor i. [formula to Measure Signal] For the avoidance of doubt we have: For k=1,2,3,4 currency k means respectively USD,EUR,GBP,JPY For i=1,2,3,4 tenor i means respectively 5y,10y,20y,30y Please refer to Appendix C for backtesting assumptions.
Value$^{k}_{i}$	For any London Business Day t: $\text{Value}^k_i(t)=\frac{\text{Carry}^k_i(t-1) - \overline{\text{Carry}}^k_i(t-1)}{\text{StDev}(\text{Carry}^k_i(t-1))}$ Where: $\text{Carry}^k_i(t)=\text{1mFWD}^k_i(t) - \text{Spot}^k_i(t)$ If t is not a Local^k Business Day then $\text{1mFWD}^k_i(t)$and $\text{Spot}^k_i(t)$ shall be equal to the value as of the immediately preceding London and Local^k Business Day. $\text{StDev}(\text{Carry}^k_i(t))=\sqrt{\frac{\sum_{d=t-(n-1)}^{d=t}\left(\text{Carry}^k_i(d)-\overline{\text{Carry}}^k_i(t)\right)^2}{(n-1)}}$ $\overline{\text{Carry}}^k_i(t) = \sum_{d=t-(n-1)}^{d=t}\frac{\text{Carry}^k_i(d)}{n}$ “d” means each London Business Day from and including day t-(n-1) to and including day t “n” shall be equal to 1200 Please refer to Appendix C for backtesting assumptions.
Spot Swap$^{k}_{i}$	For any London and Local^k Business Day t, a swap transaction with a maturity equal to tenor i and denominated in currency k, following the standard swap conventions for this tenor and currency, with an effective date on the Spot Date immediately following day t

	Please refer to the Appendix B for a list of the standard swap conventions
1mFWD $Swap_i^k$	For any London and $Local^k$ Business Day t, a swap transaction with a maturity equal to tenor i and denominated in currency k, following the standard swap conventions for this tenor and currency, with an effective date on the date which is 1 month after the Spot Date immediately following day t, adjusted using a modified following convention. Please refer to the Appendix B for a list of the standard swap conventions
$Spot_i^k$	For any London and $Local^k$ Business Day t, the mid-market spot rate (quoted in percentage points) for the Spot $Swap_i^k$, as of London Time on such Day, as determined using the processes and price sources specified in the Yield Curve methodology. Please refer to the Appendix C for more details on the backtest parameters of the Yield Curve methodology.
$1mFWD_i^k$	For any London and $Local^k$ Business Day t, the mid-market forward rate (quoted in percentage points) for the 1mFWD $Swap_i^k$, as of London Time on such Day, as determined using the processes and price sources specified in the Yield Curve methodology. Please refer to the Appendix C for more details on the backtest parameters of the Yield Curve methodology.
Top1 **Top2** **Bottom1** **Bottom2**	For any London Business Day t: [formula to measure Top1, Top2, Bottom1, Bottom2] With i=1,2,3,4, and k=1,2,3,4 Top1{i,k} refers to the Tenor i and Currency k that defines the Index component for which the value signal determines: $Value_i^k(t)=Top1(t)$ Similarly, Bottom1{i,k} refers to the Tenor i and Currency k that defines the Index component for which the value signal determines: $Value_i^k(t)=Bottom1(t)$
Gross $Index^k$	For any London and $Local^k$ Business Day t : $\text{Gross Index}^k(t)=\text{Gross Index}^k(t-1)+\left\{\sum_{i=1}^{4}\text{Ins Ret}_i^k(t)\right\}\times\frac{FX^k(t)}{FX^k(t-1)}$ Where Gross $Index^k$ starts on the 13th October 1989.
Vol Scale lev	For any Index Business Day t: [formula to measure Vol Scale lev]Where Gross $Index^k(t)=0$ if t is prior to Gross $Index^k$ start date If t is not a Tokyo Business Day then Gross $Index^4(t)$ shall be equal to the value as of the immediately preceding Tokyo Business Day.
Target Vol Cap	[description of Target Vol Cap used]
Port Vol Scale	For any London Business Day t: If t is the Trading Business Day immediately following the 1st London Business Day of the week then: Port Vol Scale(t)=Vol Scale lev(t-1) If t-1 is not an Index Business Day then the value of Vol Scale lev as of the immediately preceding Index Business Day shall be use Otherwise: Port Vol Scale(t)=Port Vol Scale(t-1)
TC^k	For any London and $Local^k$ Business Day t: $TC^k(t)=\frac{1}{20}\left(\text{Outright }TC^k(t)+\text{Switch }TC^k(t)+\text{Roll }TC^k(t)\right)$
Outright TC^k	For any London and $Local^k$ Business Day t: $\text{Outright }TC^k(t)=\sum_{p=0}^{19}\text{Abs}\left(\sum_{i=1}^{4}\text{Delta Change}_i^{k,p}(t)\right)\times\text{Outright Bid/Mid}^k$

<table>
<tr><td>Delta Change$_i^{k,p}$</td><td>For any London and Local^k Business Day t:
If p different from 0:
$$\text{Delta Change}_i^{k,p}(t)=\text{Signal}_i^{k,p}(t)\times\text{Port Vol Scale}(t)-\text{Signal}_i^{k,p}(t)\times\text{Port Vol Scale}(t)\times\frac{PV01_{FWD_i}^{k,p}(t)}{PV01_{FWD_i}^{k,p}(t-1)}$$
If p equals 0:
$$\text{Delta Change}_i^{k,0}(t)=\text{Signal}_i^{k,0}(t)\times\text{Port Vol Scale}(t)-\text{Signal}_i^{k,20}(t)\times\text{Port Vol Scale}(t)\times\frac{PV01_{FWD_i}^{k,20}(t)}{PV01_{FWD_i}^{k,20}(t-1)}$$
For the avoidance of doubt, $PV01_{FWD,i}^{k,p}(t)$ and $PV01_{FWD,i}^{k,p}(t-1)$ are both related to the same Forward Swap$_i^{k,p}$ defined as of the current day t.</td></tr>
<tr><td>Switch TC^k</td><td>For any London and Local^k Business Day t:
$$\text{Switch TC}^k(t)=\sum_{p=0}^{19}\text{Switch Delta}^{k,p}(t)\times\text{Outright Bid/Mid}^k\times 1.5$$
Where;
$$\text{Switch Delta}^{k,p}(t)=\text{Min}\left\langle\sum_{i=1}^{4}\text{Max}\left(\text{Delta Change}_i^{k,p}(t),0\right),\sum_{i=1}^{4}-\text{Min}\left(\text{Delta Change}_i^{k,p}(t),0\right)\right\rangle$$</td></tr>
<tr><td>Roll TC^k</td><td>For any London and Local^k Business Day t:
$$\text{Roll TC}^k(t)=\sum_{i=1}^{4}\text{Roll Delta}_i^k(t)\times\text{Roll Cost}_i^k$$
Where:
If $\text{Sign}(\text{Signal}_i^{k,0}(t))=\text{Sign}(\text{Signal}_i^{k,20}(t))$ Then:
$$\text{Roll Delta}_i^k(t)=\text{Min}\left[\text{Abs}\left(\text{Signal}_i^{k,0}(t)\times\text{Port Vol Scale}(t)\right),\text{Abs}\left(\text{Signal}_i^{k,20}(t)\times\text{Port Vol Scale}(t)\times\frac{PV01_{FWD_i}^{k,20}(t)}{PV01_{FWD_i}^{k,20}(t-1)}\right)\right]$$
Otherwise
$\text{Roll Delta}_i^k(t)=0$
For the avoidance of doubt, $PV01_{FWD,i}^{k,p}(t)$ and $PV01_{FWD,i}^{k,p}(t-1)$ are both related to the same Forward Swap$_i^{k,p}$ defined as of the current day t.</td></tr>
<tr><td>Outright Bid/Mid And Roll Cost</td><td>All below number are quoted in basis points
<table>
<tr><td></td><td>i</td><td>1</td><td>2</td><td>3</td><td>4</td></tr>
<tr><td>k</td><td>Outright Bid/Mid^k</td><td colspan="4">Roll Cost$_i^k$</td></tr>
<tr><td>1</td><td>Outright Bid/Mid</td><td>Roll Cost</td><td>Roll Cost</td><td>Roll Cost</td><td>Roll Cost</td></tr>
<tr><td>2</td><td>Outright Bid/Mid</td><td>Roll Cost</td><td>Roll Cost</td><td>Roll Cost</td><td>Roll Cost</td></tr>
<tr><td>3</td><td>Outright Bid/Mid</td><td>Roll Cost</td><td>Roll Cost</td><td>Roll Cost</td><td>Roll Cost</td></tr>
<tr><td>4</td><td>Outright Bid/Mid</td><td>Roll Cost</td><td>Roll Cost</td><td>Roll Cost</td><td>Roll Cost</td></tr>
</table></td></tr>
<tr><td>Index Business Day</td><td>Each day which is a Local^1, Local^2 and Local^3 Business Day.</td></tr>
<tr><td>Index Trading Business Day</td><td>Each day which is a Local^1, Local^2, Local^3 and Local^4 Business Day.</td></tr>
<tr><td>ICE Futures</td><td>A day on which ICE Futures Europe is scheduled to be open (or would have been but for the occurrence of a</td></tr>
</table>

Europe (UK) Business Day	market disruption event) for trading in British interest rate futures contracts.
CME Business Day	A day on which the Chicago Mercantile Exchange (Globex) is scheduled to be open (or would have been but for the occurrence of a market disruption event) for trading in American interest rate futures contracts.
Eurex Business Day	A day on which Eurex is scheduled to be open (or would have been but for the occurrence of a market disruption event) for trading in European interest rate futures contracts.
ICE Futures Europe (EU) Business Day	A day on which ICE Futures Europe is scheduled to be open (or would have been but for the occurrence of a market disruption event) for trading in European interest rate futures contracts.
Tokyo Financial Exchange Business Day	A day on which Tokyo Financial Exchange is scheduled to be open (or would have been but for the occurrence of a market disruption event) for trading in Japanese interest rate futures contracts.
Osaka Exchange Business Day	A day on which Osaka Exchange is scheduled to be open (or would have been but for the occurrence of a market disruption event) for trading in Japanese interest rate futures contracts.
BD Modification Date	20 November 2019
Disruptions Events / Fallbacks	1. **Index Adjustment:** If, due to the occurrence of an error (i) in relation to the calculation or publication of the level of the Index, or (ii) in the method for determining the Index, the Index Sponsor has determined on any day (an **"Adjustment Determination Date"**) that an adjustment to the Index is necessary in order to correct such error (a **"Index Adjustment"**), then the Index Sponsor will make such corresponding adjustments to the Index as it deems necessary, if any, in order to reflect the Index Adjustment (in each case in accordance with the principles and methodology of the Index). 2. **Index Disruption Event:** If, in the opinion of the Index Sponsor, an Index Disruption Event has occurred or is occurring, including in respect of any Index Component utilised to calculate the level of the Index on any day, then, the Index Sponsor may (with a view to preserving the objective of the Index): a) delay or postpone the rebalancing and/or calculation of such Index Component; to a day not later than the Disruption Cut-off Date, notwithstanding that such day is subject to an Index Disruption Event and in which case the Index Sponsor will determine the level of such Index Component as of that Disruption Cut-off Date in its sole discretion and acting in a commercially reasonable manner; and/or b) not calculate and publish the Index Level for such day or delay the publication, or c) determine the level of any affected Index Component in respect of such relevant day (including without limitation the Yield Curve), in its sole discretion and acting in a commercially reasonable manner (regardless of whether or not a level of any such affected Index Component has been published by the Price Source in respect of such day); having regard to the standard of input data quality for the Index as determined by the Index Sponsor during the design of the Index, as set out in Appendix 2, Section 6 of the Control Framework Summary ("Data Sufficiency and Hierarchy of Input Data"). "**Disruption Cut-off Date**" means the 5th Index Business Day from and including the original day. The determination by the Index Sponsor in its sole discretion that one or more of the following events (eachan "**Index Disruption Event**") has occurred: (a) the material suspension of, a material limitation imposed on, or the cessation of the trading in any Index Component; (b) the failure of any Price Source to announce or publish any relevant price, level, rate or other data necessary for the determination of any Index Component; (c) the level published on any Price Source in relation to any price, level, rate or other data necessary to determine any Index Component is significantly different to the level of such data prevailing in the market; (d) a material change by the Price Source in the content, composition, constitution of, or in the formula for or method of calculating (a **"Material Change"**) any Index Component (including where any such Material Change is due to an amendment or other modification to the rules and/or regulations of the Price Source); (e) the failure of any Price Source to open for trading during a scheduled trading session, or the early closure thereof (without 48 hours prior notice to the market); or (f) the occurrence of any event or circumstance which generally prevents, disrupts or impairs the ability of market participants in general to enter into transactions or obtain market values of the type which would be required to implement the Index in a commercially reasonable manner (including, without limitation, a significant widening in the bid/offer and/or a significant reduction in liquidity in an Index Component); (g) in respect of an Index Component or the Index, a systems failure, natural or man-made disaster, act of God, armed conflict, act of terrorism, riot or labour disruption or any similar intervening circumstances beyond the Index Sponsor's reasonable control which prevents, disrupts, or impairs the ability of the Index to achieve its economic objective, the prompt or accurate determination of the level of the Index, and/or the ability of the Index Sponsor or Index calculation agent to perform its role in respect of the Index; or (h) any other event or circumstance that, in the opinion of the Index Sponsor, prevents, disrupts or impairs the ability of the Index to achieve its economic objective or the prompt or accurate determination of the level of the Index, or any other event or circumstance which causes the Index Sponsor to reasonably conclude that as a consequence of such event or circumstance, if the level of the Index were to be determined, it should

	not be relied upon to represent the market or economic reality that the Index is intended to measure. 3. **Index Modification:** Upon the occurrence of an Index Modification Event, the Index Sponsor may i. remove or replace such affected Index Component with an alternative futures or options contract, currency, rate, variable or other component (a "**Replacement Index Component**") which, in it its sole determination, is consistent with the objective of the Index and, where possible, is of the same or equivalent standard of quality as any input data and/or price source used prior to the occurrence of the Index Modification Event, having regard to the standard of input data quality for the Index as determined by the Index Sponsor during the design of the Index, as set out in Appendix 2, Section 6 of the Control Framework Summary ("Data Sufficiency and Hierarchy of Input Data"); and/or ii. make such other adjustments as it deems appropriate to take such event into account (including without limitation replacing certain Price Sources used for determining the Yield Curve). The Index Sponsor may refrain from publishing the Index until the Index Modification Event ceases to exist. For the purpose of the removal or replacement of any affected Index Component, the Index Sponsor shall make any other adjustments to the Index to account for the price or value of the affected Index Component at the time of its removal and any related charges, fees or taxes as well as the cost to the Index Sponsor for implementing any Replacement Index Component. An **"Index Modification Event"** shall be deemed to have occurred if: a) the Index Sponsor determines, in its sole discretion, that an Index Component (i) is no longer available (whether due to a permanent discontinuation of trading, disappearance or otherwise) or (ii) has been the subject of a Material Change in a manner which has or will have a material adverse effect on the Index achieving its stated objective; or b) the Index Sponsor determines, in its sole discretion, that the level published on any Price Source in relation to any price, level, rate or other data necessary to determine any Index Component (i) is discontinued, so as to materially affect the Index calculation; (ii) is repeatedly different to a significant extent from the level of such data prevailing in the market; or (iii) no longer accurately and reliably represents the market and economic reality purported to be measured by that data, each as determined by the Index Sponsor acting in good faith and a commercially reasonable manner; or c) the Index Sponsor determines, in its sole discretion, that any input data and/or price source in relation to an Index Component used to calculate the Index no longer meets the standard of input data quality for the Index as determined by the Index Sponsor during the design of the Index, as set out in Appendix 2, Section 6 of the Control Framework Summary ("Data Sufficiency and Hierarchy of Input Data"); or d) an Extraordinary Event has occurred. 4. **Extraordinary Event** in respect of any Index Component means any of Change in Law, Index Component Disruption and/or Increased Cost of Index Implementation. **Change in Law** means that, on or after the Live Date (i) due to the adoption of or any change in any applicable law or regulation (including, without limitation, any tax law), or (ii) due to the promulgation of or any change in the interpretation by any court, tribunal or regulatory authority with competent jurisdiction of any applicable law or regulation (including any action taken by a taxing authority), the Index Sponsor determines in good faith that (x) it has become illegal to hold, acquire or dispose of an Index Component, or (y) there is a materially increased cost of trading in an Index Component for the Index Sponsor or its affiliates (including, without limitation, due to any increase in tax liability, decrease in tax benefit or other adverse effect on its tax position). **Index Component Disruption** means that the Index Sponsor or any of its affiliates or agents is unable, or it is impractical, after using commercially reasonable efforts, to (i) acquire, establish, re-establish, substitute, maintain, unwind or dispose of any transaction(s) or asset(s) it deems necessary to implement the Index, or (ii) realise, recover or remit the proceeds of any such transaction(s) or asset(s), including, without limitation, where such inability or impracticability has arisen by reason of (x) any restriction on making new or additional investments in any Index Component. **Increased Cost of Index Implementation** means that the Index Sponsor or any of its affiliates would incur a materially increased (as compared with circumstances existing on the Live Date) amount of tax, duty, expense or fee to (i) acquire, establish, re-establish, substitute, maintain, unwind or dispose of any transaction(s) or asset(s) it deems necessary to implement the Index, or (ii) realise, recover or remit the proceeds of any transaction(s) or asset(s). 5. **Index Cancellation:** The Index Sponsor may permanently cancel and discontinue calculating and publishing the Index, in accordance with Appendix 2, Section 17 of the Control Framework Summary (as defined below).
Price Source	**"Price Source"** means, in respect of an Index Component, the publication, page (or any other origin of reference, including an exchange) containing (or reporting) the prices, levels, rates or other data utilised by the Index Sponsor for such Index Component. References to Price Source shall be construed as referring also to

	any successor publication, page or source on which the relevant prices, levels, rates or other data for a Index Component may be disseminated, as determined by the Index Sponsor it its sole discretion and acting in a commercially reasonable manner.
Index Component	**"Index Component"** means, in respect of the Index, each underlying component index, futures contract, currency, rate, variable or other component necessary in order to determine a level of the Index (including the Yield Curve and any data used to determine the Yield Curve), in each case, in line with the then existing methodology of the Index.
Index Disclaimer	The Index Sponsor and its affiliates make no representation whatsoever, whether express or implied, either as to the results to be obtained from the use of an Index and/or the levels at which the relevant Index stands at a particular time on any particular date or otherwise. The Index Sponsor and its affiliates shall not be liable (whether in contract, tort or otherwise) to any person for any error in such Index. The Index Sponsor and its affiliates make no representation whatsoever, whether express or implied, as to the advisability of purchasing or assuming any risk in connection with entering into any transactions or products which are linked to or deriving a value from an Index. Neither the Index Sponsor nor its affiliates shall have any liability for any act or failure to act by the Index Sponsor in connection with the calculation, adjustment or maintenance of an Index. Although the Index Sponsor will obtain information concerning an Index from publicly available sources it believes reliable, such information may not have been independently verified. Accordingly, no representation, warranty or undertaking (express or implied) is made and no responsibility is accepted by the Index Sponsor or its affiliates as to the accuracy, completeness and timeliness of information concerning an Index or any other information provided by any person in connection with the information described herein, or as to the continuance of calculation or publication of an Index. Nothing in this disclaimer shall exclude or limit liability to the extent such exclusion or limitation is not permitted by law or regulation to which the Index Sponsor is subject.

Additional information in respect of the Index methodology

The Index Sponsor has established a governance framework (the "**Governance Policy and Control Framework**") to ensure compliance with the European Benchmark Regulation, the IOSCO Principles and any related measures and applicable FCA rules (each as amended or replaced from time to time)[1]. The Governance Policy and Control Framework governs (amongst other things) the development, determination and operation of indices administered by the Index Sponsor. A summary of the Governance Policy and Control Framework (the "**Control Framework Summary**") is published on: www.nomuranow.com/portal/site/nnextranet/en/global-markets/structured-derivatives/quant-investment-strategies.shtml. Please refer to the summary of the Governance Policy and Control Framework in respect of the following information applying to the Index methodology:

Criteria for Index Development and Input Data and Source Selection	The criteria and procedures used to develop this Index, and for selecting the sources of data inputs used in the Index, are set out in Appendix 2, Section 3 of the Control Framework Summary ("Index Design and Creation of New Indices") and Appendix 2, Section 6 ("Data Sufficiency and Hierarchy of Data Inputs").
Exercise of Expert Judgment and discretion	The Index Sponsor has adopted guidelines and procedures designed to promote consistency in the exercise of Expert Judgment and discretion for Index determinations. Further details are contained in Appendix 2, Section 14 of the Control Framework Summary ("Expert Judgment and Discretion").
Input Data Type Priority	The Index Sponsor applied the hierarchy for data inputs as set out in Appendix 2, Section 6 of the Control Framework Summary ("Data Sufficiency and Hierarchy of Data Inputs") when considering the data inputs used to construct the Index.
Index Error Reports and Revision	The Index Sponsor has adopted procedures for analysis and remediation of Index errors, and for potential restatement of a published Index level. Further details are contained in Appendix 2, Section 13 of the Control Framework Summary ("Correction of Errors") and Appendix 2, Section 15 ("Changes to Methodology") where remediation requires change to the Index Methodology.
Quantity and Quality of Input	The Index is constructed by the Index Sponsor using both single prices or levels and an average or other formula of prices or levels prescribed by the Index Methodology. The Index Sponsor therefore considers that

[1] *https://www.iosco.org/library/pubdocs/pdf/IOSCOPD415.pdf . The Governance Policy and Control Framework will be periodically reviewed and has been updated to reflect the requirements of the Regulation on indices used as benchmarks in financial instruments and financial contracts or to measure the performance of investment funds and amending Directives 2008/48/EC and 2014/17/EU and Regulation (EU) No 596/2014 (Regulation (EU) 2016/1011) (the "**Benchmark Regulation**"), as well as related level 2 measures and applicable FCA rules.*

Data	the requirement to determine the thresholds of the quantity of data inputs, necessary to determine the Index accurately and reliably, has been met. The Index Sponsor determines the standards of quality of the data inputs used in this Index at the design stage of the Index in accordance with Appendix 2, Section 6 of the Control Framework Summary (“Data Sufficiency and Hierarchy of Data Inputs”). These standards are reflected in the Index Methodology, as described in this Rulebook. The Index Sponsor will review these standards and the data inputs on a periodic basis in accordance with Appendix 2, Section 16 of the Control Framework Summary (“Periodic Review of Indices”) and in the full policies and procedures available on the Index Sponsor’s public website, to ensure that the data inputs used continue to be of sufficient quality to determine the Index accurately and reliably, and will accordingly determine whether an Index Modification Event has occurred.
Internal Reviews of the Index	The Index Sponsor is required to conduct internal reviews of the Index on a periodic basis. Further details regarding the frequency of those reviews, the procedures to be followed, and the bodies or functions within the Index Sponsor’s organisational structure involved in such reviews, are contained in Appendix 2, Section 16 of the Control Framework Summary (“Periodic Review of Indices”) and in the full policies and procedures available on the Index Sponsor’s public website. Reviews will further be conducted where the Index Sponsor considers it desirable or necessary to do so, including in response to specific events or otherwise. Specific events may include (without limitation) any index errors, index disruptions, or other index life-cycle events; changes in market circumstances; changes in the applicable legal or regulatory environment; any challenges or complaints or other feedback from stakeholders, and/or any material audit findings. Further information regarding the procedures to be followed in response to certain specific events, and the bodies or functions within the Index Sponsor’s organisational structure involved in such reviews, can be found in Appendix 2, Sections 13 (“Correction of Errors”),14 (“Expert Judgment and Discretion”), 15 (“Changes to Methodology”), 19 (“Complaints Handling Policy”), 21 (“Audits”), and any other sections of the Control Framework Summary which may be relevant from time to time.
Index Approval	The criteria and procedures used to approve the Index, and the bodies or functions within the Index Sponsor’s organisational structure involved in such approval, are set out in Appendix 3 of the Control Framework Summary (“Main Features of Index Committee Constitution and Terms of Reference”) and Appendix 2, Section 3 (“Index Design and Creation of New Indices”).
Investor Consultation upon Index termination and material changes to the Index methodology	The Index Sponsor is required to consult investors of index linked products when proposing material changes to the Index methodology and termination of the Index. Further details on the circumstances and procedures under which consultation takes place are contained in Appendix 2, Section 15 of the Control Framework Summary (“Changes to Methodology”), Appendix 2, Section 17 (“Termination of Indices and Transitional Arrangements”) and in the full policies and procedures available on the Index Sponsor’s website.
Active Market of the Index	As of the date of this Index Description, the Index Sponsor considers the underlying market of the Index to be active, in accordance with in Appendix 2, Sections 3 (“Index Design and Creation of New Indices and Methodologies”) of the Control Framework Summary.
Outsourcing of Index Determination	The Index Sponsor has outsourced certain IT, Quants, Middle Office and Structuring functions to Nomura Structured Finance Services (India) Private Limited subject to a corporate service agreement between the entities. Further details are contained in Appendix 2, Section 1 of the Control Framework Summary (“Oversight of Third Parties”).

Appendix

Appendix A:

Data Sources:

Foreign exchange rate

[description of Price Levels used]

Bloomberg page:

Bloomberg page	Target Vol	CCY
NMRSVD3U <Index>	3%	USD
NMRSVD9U <Index>	9%	USD
NMRSVD0U <Index>	10%	USD
NMRSVD3Y <Index>	3%	JPY

*This Currency is quoted as the number of foreign currency per 1 unit of US Dollars. The inverse of this rate is then use for FX^k and $FX_{CCY/USD}$ ratios computation

[1] FX rate from Reuters Ticker is computed as being the average of the Bid and Ask quotes

Appendix B

$Local_{CCY}$ Calendar and Spot Date Convention for each Currency:

Currency k	$Local_{CCY}$	Spot Date - adjustment from current date
USD	New-York (NY)	+ 2 London BizDays, resulting date being adjusted for LON NY
EUR	Target	+2 Target BizDays
JPY	Tokyo	+2 London and Tokyo Bizdays
GBP	London	+0 London Bizday

Swaps conventions for every tenors and swap currencies

Currency k	Tenor i	Holiday	Floating Index	Floating Leg Pay Convention	Fixed Leg Pay Convention
USD	5y	London, New-York	USD-LIBOR-BBA	Quarterly ,Act/360, Modified Following	Semi-Annually, 30/360 Modified Following
USD	10y	London, New-York	USD-LIBOR-BBA	Quarterly ,Act/360, Modified Following	Semi-Annually, 30/360 Modified Following
USD	20y	London, New-York	USD-LIBOR-BBA	Quarterly ,Act/360, Modified Following	Semi-Annually, 30/360 Modified Following
USD	30y	London, New-York	USD-LIBOR-BBA	Quarterly ,Act/360, Modified Following	Semi-Annually, 30/360 Modified Following
EUR	5y	Target	EUR-EURIBOR	Semi-Annually, Act/360, Modified Following	Annually, 30/360, Modified Following
EUR	10y	Target	EUR-EURIBOR	Semi-Annually, Act/360, Modified Following	Annually, 30/360, Modified Following
EUR	20y	Target	EUR-EURIBOR	Semi-Annually, Act/360, Modified Following	Annually, 30/360, Modified Following
EUR	30y	Target	EUR-EURIBOR	Semi-Annually, Act/360, Modified Following	Annually, 30/360, Modified Following
JPY	5y	London Tokyo	JPY-LIBOR-BBA	Semi-Annually, Act/360, Modified Following	Semi-Annually, Act/365f, Modified Following
JPY	10y	London Tokyo	JPY-LIBOR-BBA	Semi-Annually, Act/360, Modified Following	Semi-Annually, Act/365f, Modified Following
JPY	20y	London Tokyo	JPY-LIBOR-BBA	Semi-Annually, Act/360, Modified Following	Semi-Annually, Act/365f, Modified Following
JPY	30y	London Tokyo	JPY-LIBOR-BBA	Semi-Annually, Act/360, Modified Following	Semi-Annually, Act/365f, Modified Following
GBP	5y	London	GBP-LIBOR-BBA	Semi-Annually, Act/365f, Modified Following	Semi-Annually, Act/365f, Modified Following
GBP	10y	London	GBP-LIBOR-BBA	Semi-Annually, Act/365f, Modified Following	Semi-Annually, Act/365f, Modified Following
GBP	20y	London	GBP-LIBOR-BBA	Semi-Annually, Act/365f,	Semi-Annually, Act/365f,

				Modified Following	Modified Following
GBP	30y	London	GBP-LIBOR-BBA	Semi-Annually, Act/365f, Modified Following	Semi-Annually, Act/365f, Modified Following

Appendix C

Backtesting assumptions:

The foreign exchange rate data sources used by the Index prior to 01 January 2014 can be found in Appendix A.

Prior to 12 April 1995 , the strategy takes position in only 2 instruments based on Top1 and Bottom1 Value indicator

Each Index Component is considered for inclusion in the strategy from a date which is 239 London Business Day immediately following the Index Component Start Date (i,k) as defined in the table below. From the first date of inclusion to and including the date which is 1199 London Business Day immediately following the Index Component Start Date (i,k), an expanding window equal to n = (t - Index Component Start Date (i,k)+1) is used to compute the value Indicator $\text{Value}_i^k(t)$.

Underlying Instrument Start Date conventions for every tenors and swap currencies

Currency k	Tenor i	Index component Start Date (i,k)
USD	5y	01/11/1988
USD	10y	01/11/1988
USD	20y	05/05/1994
USD	30y	05/05/1994
EUR	5y	01/11/1989
EUR	10y	01/11/1989
EUR	20y	12/02/1998
EUR	30y	12/02/1998
JPY	5y	01/11/1989
JPY	10y	01/11/1989
JPY	20y	27/12/1995
JPY	30y	06/09/1999
GBP	5y	16/11/1990
GBP	10y	16/11/1990
GBP	20y	02/06/1997
GBP	30y	19/01/1999

Backtest parameters of the Yield Curve methodology:

Before January 2014 the yield curve for each Currency is built using Nomura proprietary yield curve interpolation methodology, using ISDA Swap Rates and LIBOR fixings when available and Bloomberg end of day level before that: please see the table below for ticker details.

From the 2nd of January 2014 the yield curve for each Currency is built using Nomura proprietary Yield Curve interpolation methodology (as defined in the NIP Indices Yield Curve Process document dated July 2017 as amended and/or supplemented from time to time and published on the Nomura QIS Website) using Reuters market data as of.

USD Curve Instruments before January 2014:

[description of Price Levels used]

Instrument	ISDA / LIBOR ticker	Bloomberg ticker	Bloomberg source used From (including) – To (excluding)

EUR Curve Instruments before January 2014:

[description of Price Levels used]

Before the Introduction of the EUR, the DM rates data is used as set out below.

For each tenor i the Rates Curve is built using the 6m EURIBOR, 1y rate adjusted with the 3m v 6m basis and the Swap Rates from 2y to 30y

Instrument	ISDA / LIBOR ticker	Bloomberg ticker	Bloomberg source used From (including) – To (excluding)

[2] *The 3m vs 6m basis is added to the 1y EUR Swap Rate. Before the Bloomberg source start date basis is assumed to be 0.*

[3] *25y Swap Rate is not used in the curve construction before 23/09/1999 from and including this date the EUR ISDA fixing is used*

JPY Curve Instruments before January 2014:

[description of Price Levels used]

Instrument	ISDA / LIBOR ticker	Bloomberg ticker	Bloomberg source used From

			(including) – To (excluding)

<u>GBP Curve Instruments before January 2014:</u>

[description of Price Levels used]

For each tenor i the Rates Curve is built using the 6m LIBOR, 1y swap rate adjusted with the 3m v 6m basis and the Swap Rates from 2y to 30y

Instrument	ISDA / LIBOR ticker	Bloomberg ticker	Bloomberg source used From (including) – To (excluding)

[2] *The 3m vs 6m basis is added to the 1y EUR Swap Rate. Before the Bloomberg source start date basis is assumed to be 0.*

[3] *25y Swap Rate is not used in the curve construction before 23/09/1999 from and including this date the EUR ISDA fixing is used*

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