Derivatives Service Bureau

Validations and normalisations for cross-asset non-standard products

November 2020

Preface

Change History

Date	Change	Version	Author	Revision Details
09/03/2018	Creation	0.1	Natalia Kozlovich	Initial Version
16/08/2018	Update	0.2	Natalia Kozlovich	Added normalisations matrix in 3.2 and described additional cross-asset specific normalisations in 3.2.6 - 3.2.11.
12/11/2018	Update	0.3	Natalia Kozlovich	Option Type and Option Exercise Style mandatory for Cross-Asset Option
13/12/2018	Update	0.4	Natalia Kozlovich	Updated Base Product validation to include Multi commodity exotic support (2.5). Added Underlying Instrument Index Term validation (2.7).
16/10/2020	Update	0.5	Natalia Kozlovich	Added Strike Price Type field and validation.

1 Introduction

- This document is designed to provide the user with a description of the validation and normalisation rules that have been put in place for the following products:
  - Cross-asset Swap (Other.Swap)
  - Cross-asset Option (Other.Option)
  - Cross-asset multi instrument product (Other.Other)
- The three product definitions listed above have been designed to enable users to create ISINs for complex products comprising attributes from multiple asset classes and correspond with the relevant CFI codes. All other existing templates providing attributes for instruments with a single, specified asset class
- The DSB had developed the rules documented in v.0.1 of this document and made them available for user testing while in parallel seeking industry feedback to determine whether the validations and normalisations described in v.0.1 of this document were sufficient.
- Following industry feedback, the DSB has identified additional normalisations described in v.0.2 of this document (section 3.2), specifically pertaining to instances where products have multiple attributes across each leg.
- This document should be used in conjunction with DSB Product Definitions – Annex 6 on the DSB website that acts as a manual for users to interpret and utilize the cross-asset non-standard templates.
- Any feedback or queries in relation to Product Definition design should be directed to secretariat@ANNA-DSB.com.
- New product requests can be made via the DSB website at https://www.anna-dsb.com/new-product-definition-submission-form/.

Contents

2 Validations for non-standard templates

Most of the validation rules documented here are consistent with the rules currently applied for other DSB product templates.

2.1 General Validations

Swap	Option	Other	Field[1]	Validation
√	√	√	**Notional Currency**	Must be different to **Other Notional Currency**.
√	√	√	**Expiry Date**	**Expiry Date** must be in the "YYYY-MM-DD" format. **Expiry Date** cannot be less than "1970-01-01". **Expiry Date** cannot be greater than "2500-12-31".
√	√	√	**Price Multiplier**	**Price Multiplier** must be greater than 0. **Price Multiplier** cannot be greater 99999999999999999.
√	√		**Delivery Type**	Enumeration list[2]. If **Settlement Currency** is populated, **Delivery Type** must be Cash.
√	√	√	**Underlying Instrument ISIN**	Syntactic validation only.
√	√	√	**Underlying Instrument LEI**	Syntactic validation only.
√	√	√	**Underlying Instrument Index**	Enumeration list.
√	√	√	**Underlying Instrument Index Prop**	Pre-submitted list to the DSB.[3]

[1] The order in which the fields are listed is the order in which the fields are displayed on the GUI.

[2] Content of the enumeration lists can be found in JSON, sources of the enumeration lists can be found in DSB Product Definitions. This is applicable to all enumeration lists specified in this document.

[3] In accordance with the rules set out on the DSB website.

Swap	Option	Other	Field[1]	Validation
√	√	√	**Underlying Instrument Index Term Value**	**Underlying Instrument Index Term Value** cannot be less than -999. **Underlying Instrument Index Term Value** cannot be greater than 999. Must be populated if **Underlying Instrument Index/Prop** is populated, but can be 0 DAYS.
√	√	√	**Underlying Instrument Index Term Unit**	Enumeration list. Must be populated if **Underlying Instrument Index/Prop** is populated.
√	√	√	**Underlying Credit Index Series**	Only applicable to a credit **Underlying Instrument Index/Prop.** See 2.6
√	√	√	**Underlying Credit Index Version**	Only applicable to a credit **Underlying Instrument Index/Prop.** See 2.6
√	√	√	**Debt Seniority**	Enumeration list. Only applicable to **Underlying Instrument ISIN/ Underlying Instrument LEI**.
	√	√	**Strike Price Type**	Enumeration list. Must be populated for any **Strike Price**
	√	√	**Strike Price**	**Strike Price** can be a value: positive or negative including 0 or PNDG.
	√	√	**Strike Price Currency**	Enumeration list. Applicable to/must be populated for Strike Price Type = 'Monetary Value' and 'PNDG'.
	√	√	**Option Type**	Enumeration list. For Instrument Type "Other": Must be populated when **Option Exercise Style** is populated. For Instrument Type "Option": Must be populated.
	√	√	**Option Exercise Style**	Enumeration list. For Instrument Type "Other": Must be populated when **Option Type** is populated. For Instrument Type "Option": Must be populated.
√	√	√	**Base Product/ Sub Product/ Additional Sub Product**	Enumeration list.

Swap	Option	Other	Field[1]	Validation
√	√	√	**Other Base Product/ Sub Product/ Additional Sub Product**	Enumeration list. Might only be selected if **Base Product/ Sub Product/ Additional Sub Product** is selected.
√	√	√	**Transaction Type**	Enumeration list. Only applicable and must be populated if **Base Product/ Sub Product/ Additional Sub Product** is selected.
√	√	√	**Final Price Type**	Enumeration list. Only applicable and must be populated if **Base Product/ Sub Product/ Additional Sub Product** is selected.
√	√	√	**Reference Rate Commodities**	Enumeration list. Might only be selected if **Base Product/ Sub Product/ Additional Sub Product** is populated
√	√	√	**Other Reference Rate Commodities**	Enumeration list. Might only be selected if **Other Base Product/ Sub Product/ Additional Sub Product** is populated.
√	√	√	**Reference Rate**	Enumeration list.
√	√	√	**Reference Rate Term Value**	**Reference Rate Term Value** cannot be less than -999. **Reference Rate Term Value** cannot be greater than 999. Must be populated and only applicable if **Reference Rate** is populated.
√	√	√	**Reference Rate Term Unit**	Enumeration list. Must be populated and only applicable if **Reference Rate** is populated.
√	√	√	**Other Leg Reference Rate**	Enumeration list. Might only be populated if **Reference Rate** is populated.
√	√	√	**Other Leg Reference Rate Term Value**	**Other Leg Reference Rate Term Value** cannot be less than -999. **Other Leg Reference Rate Term Value** cannot be greater than 999. Must be populated and only applicable if **Other Reference Rate** is populated.

Swap	Option	Other	Field[1]	Validation
√	√	√	**Other Leg Reference Rate Term Unit**	Enumeration list. Must be populated and only applicable if **Other Reference Rate** is populated.
√	√	√	**Other Notional Currency**	Must be different to **Notional Currency**.
√	√	√	**Settlement Currency**	Enumeration list. Must be populated if **Place of Settlement** is populated. If **Settlement Currency** is populated, **Delivery Type** must be Cash.
√	√	√	**Place of Settlement**	Enumeration list.

2.2 Underlying Instrument Validation

At least one Underlying Instrument must be selected:

- Underlying Instrument ISIN
- Underlying Instrument LEI
- Underlying Instrument Index
- Underlying Instrument Index Prop
- Reference Rate
- Base Product

2.3 Underlying Instrument Index/Prop Validation

Underlying Instrument Index/Prop must be selected if any of the following fields are populated:

- Underlying Instrument Index Term Value
- Underlying Instrument Index Term Unit
- Underlying Credit Index Series
- Underlying Credit Index Version

2.4 Reference Rate Validation

Reference Rate must be selected if any of the following fields are populated:

- Reference Rate Term Value

- Reference Rate Term Unit
- Other Leg Reference Rate
- Other Leg Reference Rate Term Value
- Other Leg Reference Rate Term Unit

2.5 Base Product Validation

Base Product must be selected if any of the following fields are populated:

- Other Base Product
- Transaction Type
- Final Price Type
- Reference Rate Commodities
- Other Reference Rate Commodities

All Cross-Asset instruments that include Base Product, must include one or more of the following underlying instruments in any combination:

- Underlying Instrument Index ("OTHER" for Commodities)
- Commodities or Cross-Asset Proprietary Index (single or multiple)
- Commodities Reference Rate (single or multiple)

2.6 Credit Underlying Instrument Index/Prop Validation

Scenario 1. Single Credit Underlying Instrument Index:

- Underlying Credit Index Series must be a positive integer.
- Underlying Credit Index Version must be a positive integer.

Scenario 2. Multiple Credit Underlying Instrument Index/Prop:

- Underlying Credit Index Series is optional and can be set to 0.
- Underlying Credit Index Version is optional and can be set to 0.

Scenario 3. Single Credit Underlying Instrument Index Prop:

- Underlying Credit Index Series is mandatory but can be set to 0.
- Underlying Credit Index Version is mandatory but can be set to 0.

2.7 Underlying Instrument Index Term Validation

Underlying Instrument Index Term Value for Commodities' Underlying Instrument Index of OTHER can only be 0. Underlying Instrument Index Term Value for Equities indices can only be 0.

If Underlying Instrument Index Term Value and Unit are not provided in the payload for a Commodity/Equity index, they will be defaulted to 0 DAYS.

2.8 Strike Price Validation

Strike Price value is validated depending on the Strike Price Type:
- DECIMAL - 18,13 if the price is expressed as monetary value.
- DECIMAL - 11,10 if the price is expressed as percentage.
- DECIMAL - 11,10 if the price is expressed as yield.
- DECIMAL - 18,17 if the price is expressed as basis points.
- For 'No Price' - 'Strike Price' must be 'PNDG'.

Strike Price Currency is available for an input when Strike Price Type is set to ‘Monetary Value’ OR ‘PNDG’ and is not be available for an input when Strike Price Type is set to ‘Percentage’, ‘Yield’ OR ‘Basis Points’.

For Equity Option Non-Standard: If Strike Price Currency is not provided by the user and Strike Price Type is set to ‘Monetary Value’, ‘Strike Price Currency’ is derived from ‘Notional Currency’.

For Cross-Asset Option and Cross-Asset Other: ‘Strike Price Currency’ is a mandatory user input if Strike Price Type is set to ‘Monetary Value’.

3 Normalisations for non-standard templates

Normalisation rules documented here are consistent with the current rule set for other DSB product templates.

3.1 Common Normalisation

This normalisation is applicable to all instruments.

For both legs:

1. If Reference Rate Term Unit = “DAYS” and Reference Rate Term Value is divisible by 7, record it in weeks:

Reference Rate Term Value	7	→	1
Reference Rate Term Unit	DAYS		WEEK

Reference Rate Term Value	-7	→	-1
Reference Rate Term Unit	DAYS		WEEK

2. If Reference Rate Term Unit = “MNTH” and Reference Rate Term Value is divisible by 12, record it in years:

Reference Rate Term Value	12	→	1
Reference Rate Term Unit	MNTH		YEAR

Reference Rate Term Value	-12	→	-1
Reference Rate Term Unit	MNTH		YEAR

3. If Reference Rate Term Value is 0 and Reference Rate Term Unit is anything other than DAYS, it will be recorded as 0 DAYS:

Reference Rate Term Value	0	→	0
Reference Rate Term Unit	WEEK		DAYS

Reference Rate Term Value	0	→	0
Reference Rate Term Unit	MNTH		DAYS

Reference Rate Term Value	0	→	0
Reference Rate Term Unit	YEAR		DAYS

The same normalisations apply to UnderlyingInstrumentIndexTermValue and UnderlyingInstrumentIndexTermUnit.

3.2 Product-specific Normalisation

Depending on the structure of the product being created, different product-specific normalisations will apply. The following matrix shows all the valid combinations of the leg-specific fields in the cross-asset products, where ✖ indicates an absence and ✓ indicates a presence of a Leg 1-Leg 2 combination (e.g. if only the Notional Currency and Other Notional Currency are present, then 3.2.3 Cross Currency Normalisation will apply. If ALL the leg-specific fields listed in the Leg 1 and Leg 2 columns are present then 3.2.11 will apply). Click on the normalisation number (e.g. 3.2.3) to see the details:

Leg 1	**Leg 2**	3.2.1	3.2.2	3.2.3	3.2.4	3.2.5	3.2.6	3.2.7	3.2.8	3.2.9	3.2.10	3.2.11
Notional Currency	Other Notional Currency	✖	✓	✓	✓	✖	✖	✓	✓	✓	✓	✓
Option Type		✖	✖	✖	✓	✖	✖	✖	✖	✓	✓	✓
Reference Rate	Other Leg Reference Rate	✓	✓	✖	✖	✖	✓	✓	✖	✖	✓	✓
Reference Rate Term Value	Other Leg Reference Rate Term Value	✓	✓	✖	✖	✖	✓	✓	✖	✖	✓	✓
Reference Rate Term Unit	Other Leg Reference Rate Term Unit	✓	✓	✖	✖	✖	✓	✓	✖	✖	✓	✓
Base Product	Other Base Product	✖	✖	✖	✖	✓	✓	✓	✓	✓	✖	✓
Sub Product	Other Sub Product	✖	✖	✖	✖	✓	✓	✓	✓	✓	✖	✓
Additional Sub Product	Other Additional Sub Product	✖	✖	✖	✖	✓	✓	✓	✓	✓	✖	✓
Reference Rate Commodities	Other Reference Rate Commodities	✖	✖	✖	✖	✓/✖	✓/✖	✓/✖	✓/✖	✓/✖	✖	✓/✖

3.2.1 Basis Swap Normalisation

Regardless of the order in which the reference legs are supplied, the DSB assumes the same ISIN would be allocated to the instrument, i.e. the following inputs will result in the same ISIN:

Attribute	Sample Value
Reference Rate	USD-LIBOR-BBA
Reference Rate Term Value	3
Reference Rate Term Unit	MNTH
Other Leg Reference Rate	USD-SIFMA Municipal Swap Index
Other Leg Reference Rate Term Value	9
Other Leg Reference Rate Term Unit	MNTH

Attribute	Sample Value
Reference Rate	USD-SIFMA Municipal Swap Index
Reference Rate Term Value	9
Reference Rate Term Unit	MNTH
Other Leg Reference Rate	USD-LIBOR-BBA
Other Leg Reference Rate Term Value	3
Other Leg Reference Rate Term Unit	MNTH

The DSB will normalise data submitted by the user to ensure that the same ISIN is returned for a given set of attributes.

Normalisation rules:

If “Reference Rate” is not first alphabetically, then switch the following fields as:

Reference Rate	↔	Other Leg Reference Rate
Reference Rate Term Value		Other Leg Reference Rate Term Value
Reference Rate Term Unit		Other Leg Reference Rate Term Unit

Should the Reference Rate and Other Leg Reference rate be identical then the DSB will normalise the Term Value & Unit to ensure a singular ISIN for any given basis combination:

1. If the Term Unit is the same, then order Term Value numerically from lowest to highest.
2. If the Term Unit is different, then order chronologically by Term Unit (i.e. DAY, WEEK, MNTH, YEAR).

3.2.2 Cross Currency Basis Swap Normalisation

The Notional Currency is always associated with the Reference Rate and Other Currency with the Other Reference Rate.

Regardless of the order in which the notional currencies are supplied, the DSB assumes the same ISIN would be allocated to the instrument, i.e. the following inputs will result in the same ISIN:

Attribute	Sample Value
Notional Currency	GBP
Reference Rate	GBP-LIBOR-BBA
Reference Rate Term Value	3
Reference Rate Term Unit	MNTH
Other Notional Currency	USD
Other Leg Reference Rate	USD-LIBOR-BBA
Other Leg Reference Rate Term Value	3
Other Leg Reference Rate Term Unit	MNTH

Attribute	Sample Value
Notional Currency	USD
Reference Rate	USD-LIBOR-BBA
Reference Rate Term Value	3
Reference Rate Term Unit	MNTH
Other Notional Currency	GBP
Other Leg Reference Rate	GBP-LIBOR-BBA

Other Leg Reference Rate Term Value	3
Other Leg Reference Rate Term Unit	MNTH

The DSB will normalise data submitted by the user to ensure that the same ISIN is returned for a given set of attributes.

Normalisation rules:

If “Notional Currency” is not first alphabetically, then switch the following fields as:

Notional Currency	↔	Other Notional Currency
Reference Rate		Other Leg Reference Rate
Reference Rate Term Value		Other Leg Reference Rate Term Value
Reference Rate Term Unit		Other Leg Reference Rate Term Unit

3.2.3 Cross Currency Normalisation

Regardless of the order in which the notional currencies are supplied, the DSB assumes the same ISIN would be allocated to the instrument, i.e. the following inputs will result in the same ISIN:

Attribute	Sample Value
Notional Currency	USD
Other Notional Currency	EUR

Attribute	Sample Value
Notional Currency	EUR
Other Notional Currency	USD

The DSB will normalise data submitted by the user to ensure that the same ISIN is returned for a given set of attributes.

Normalisation rules:

If “Notional Currency” is not first alphabetically, switch the following fields as:

Other Notional Currency	↔	Notional Currency
Notional Currency		Other Notional Currency

3.2.4 FX Option Normalisation

Option Type is always associated with Notional currency.

To ensure only one ISIN can be generated for a put or call option on a common currency pair, the DSB has adopted an alphabetical normalisation approach.

For example, for a EURUSD currency pair:

- User submits Notional Currency = EUR, Other Notional Currency = USD, Option Type = Put. **Action** – No change, user receives ISIN record of EUR put.
- User submits Notional Currency = USD, Other Notional Currency = EUR, Option Type = Call. **Action** – Reorder alphabetically, amend Notional Currency = EUR AND flip Option Type from Call to Put. Other Notional currency = USD. User receives ISIN record of EUR put.

The two user inputs below are the same instrument and the same ISIN record is returned to the user:

Attribute	User Input 1	ISIN Record	User Input 2	ISIN Record
Notional Currency	EUR	EUR	USD	EUR
Option type	Put	Put	Call	Put
Other Notional Currency	USD	USD	EUR	USD

3.2.5 Commodities Basis Normalisation

Regardless of the order in which the legs are supplied, the DSB assumes the same ISIN would be allocated to the instrument, i.e. the following inputs will result in the same ISIN:

Attribute	User Input 1	User Input 2
Base Product	NRGY	AGRI
Sub Product	NGAS	GROS

Additional Sub Product	GASP	FWHT
Reference Rate Commodities	NATURAL GAS-CHICAGO CITY-GATES-INSIDE FERC	WHEAT FEED-NYSE Liffe
Other Base Product	AGRI	NRGY
Other Sub Product	GROS	NGAS
Other Additional Sub Product	FWHT	GASP
Other Reference Rate Commodities	WHEAT FEED-NYSE Liffe	NATURAL GAS-CHICAGO CITY-GATES-INSIDE FERC

The Reference Rate Commodities is always associated with the Base Product/Sub Product/Additional Sub Product and the Other Reference Rate Commodities is always associated with the Other Base Product/Other Sub Product/Other Additional Sub Product.

The DSB will normalise data submitted by the user to ensure that the same ISIN is returned for a given set of attributes.

Normalisation rules:

Order alphabetically the combination string of "Base Product + Sub Product + Additional Sub Product + Reference Rate Commodities" and "Other Base Product + Other Sub Product + Other Additional Sub Product + Other Reference Rate Commodities":

- If "Base Product" and "Other Base Product" are different – alphabetically order them. The Base Product should be the first alphabetically and Other Base Product the second alphabetically. The associated attributes (Sub Product + Additional Sub Product + Reference Rate Commodities) are then moved as part of the normalisation.
- Otherwise if Base Product and Other Base Product are the same, and if "Sub product" and "Other Sub product" are different – alphabetically order them. The Sub Product should be the first alphabetically and Other Sub Product the second alphabetically. The associated attributes (Additional Sub Product + Reference Rate Commodities) are then moved as part of the normalisation.
- Otherwise if Base Product and Sub Product are the same as Other Base Product and Other Sub Product, and if "Additional Sub Product" and "Other Additional Sub product" are different – alphabetically order them. The Additional Sub Product should be the first alphabetically and Other Additional Sub Product the second alphabetically. The associated Reference Rate Commodities is then moved as part of the normalisation.

- If “Base Product/ Sub Product/ Additional Sub Product” and “Other Base Product/ Other Sub Product/ Other Additional Sub Product” are the same, alphabetically order Reference Rate Commodities and Other Reference Rate Commodities.

3.2.6 Combined Normalisation of Reference Rate and Commodity components

If “Reference Rate” and “Other Reference Rate” are different – alphabetically order them.

If Other Reference Rate is first alphabetically, swap Reference Rate<-> Other Reference Rate. The remaining attributes (Base Product

+Reference Rate Term Value + Reference Rate Term Unit+ Sub Product + Additional Sub Product + Reference Rate Commodities +) are then moved as part of the normalisation.

Sample input 1:

Leg 1		**Leg 2**	
Reference Rate	AUD-CPI	Other Leg Reference Rate	AED-EBOR-Reuters
Reference Rate Term Value	6	Other Leg Reference Rate Term Value	1
Reference Rate Term Unit	MNTH	Other Leg Reference Rate Term Unit	YEAR
Base Product	NRGY	Other Base Product	METL
Sub Product	COAL	Other Sub Product	NPRM
Additional Sub Product		Other Additional Sub Product	ALUM
Reference Rate Commodities	COAL-ARA-EEX	Other Leg Reference Rate Commodities	ALUMUNIUM ALLOY-LME 15 MONTH

Expected result 1:

Leg 1		**Leg 2**	
Reference Rate	AED-EBOR-Reuters	Other Leg Reference Rate	AUD-CPI
Reference Rate Term Value	1	Other Leg Reference Rate Term Value	6
Reference Rate Term Unit	YEAR	Other Leg Reference Rate Term Unit	MNTH
Base Product	METL	Other Base Product	NRGY

Leg 1		Leg 2	
Sub Product	NPRM	Other Sub Product	COAL
Additional Sub Product	ALUM	Other Additional Sub Product	
Reference Rate Commodities	ALUMUNIUM ALLOY-LME 15 MONTH	Other Leg Reference Rate Commodities	COAL-ARA-EEX

Otherwise if Reference Rate and Other Reference Rate are the same, and if “Reference Rate Term Unit” and “Other Leg Reference Rate Term Unit” are the same, then order Term Value numerically from lowest to highest.

Sample input 2:

Leg 1		Leg 2	
Reference Rate	AUD-CPI	Other Leg Reference Rate	AUD-CPI
Reference Rate Term Value	6	Other Leg Reference Rate Term Value	1
Reference Rate Term Unit	MNTH	Other Leg Reference Rate Term Unit	MNTH
Base Product	METL	Other Base Product	NRGY
Sub Product	NPRM	Other Sub Product	OILP
Additional Sub Product	ALUM	Other Additional Sub Product	GOIL
Reference Rate Commodities	ALUMUNIUM ALLOY-LME 15 MONTH	Other Leg Reference Rate Commodities	OIL-WTS-PLATTS MARKETWIRE

Expected result 2:

Leg 1		**Leg 2**	
Base Product	AUD-CPI	Other Leg Reference Rate	AUD-CPI
Sub Product	1	Other Leg Reference Rate Term Value	6
Additional Sub Product	MNTH	Other Leg Reference Rate Term Unit	MNTH
Reference Rate Commodities	NRGY	Other Base Product	METL
Reference Rate	OILP	Other Sub Product	NPRM
Reference Rate Term Value	GOIL	Other Additional Sub Product	ALUM
Reference Rate Term Unit	OIL-WTS-PLATTS MARKETWIRE	Other Leg Reference Rate Commodities	ALUMUNIUM ALLOY-LME 15 MONTH

Otherwise if Reference Rate and Other Leg Reference Rate are the same, and Reference Rate Term Unit and Other Leg Reference Rate Term Unit are different, then order chronologically by Term Unit (i.e. DAY, WEEK, MNTH, YEAR).

If Other Leg Reference Rate Term Unit is first chronologically, swap Reference Rate Term Unit <-> Other Leg Reference Rate Term Unit. The remaining attributes (Reference Rate Term Value) are then moved as part of the normalisation.

Sample input 3:

Leg 1		**Leg 2**	
Reference Rate	AUD-CPI	Other Leg Reference Rate	AUD-CPI
Reference Rate Term Value	1	Other Leg Reference Rate Term Value	6
Reference Rate Term Unit	YEAR	Other Leg Reference Rate Term Unit	MNTH

Leg 1		Leg 2	
Base Product	METL	Other Base Product	NRGY
Sub Product	NPRM	Other Sub Product	OILP
Additional Sub Product	ALUM	Other Additional Sub Product	GOIL
Reference Rate Commodities	ALUMUNIUM ALLOY-LME 15 MONTH	Other Leg Reference Rate Commodities	OIL-WTS-PLATTS MARKETWIRE

Expected result 3:

Leg 1		Leg 2	
Reference Rate	AUD-CPI	Other Leg Reference Rate	AUD-CPI
Reference Rate Term Value	6	Other Leg Reference Rate Term Value	1
Reference Rate Term Unit	MNTH	Other Leg Reference Rate Term Unit	YEAR
Base Product	NRGY	Other Base Product	METL
Sub Product	OILP	Other Sub Product	NPRM
Additional Sub Product	GOIL	Other Additional Sub Product	ALUM
Reference Rate Commodities	OIL-WTS-PLATTS MARKETWIRE	Other Leg Reference Rate Commodities	ALUMUNIUM ALLOY-LME 15 MONTH

Reference Rate/Term Value/Unit will always be different to Other Leg Reference Rate/Term Value/Unit will always be different. On this basis, such product will never be normalised by Base Product and Other Base Product.

Note that if Rates product in Leg 1 is first alphabetically to Rates product in Leg 2, and Commodity product in Leg 1 is second alphabetically to Commodity product in Leg 2, no normalisation will take place.

Sample input 4:

Leg 1		Leg 2	
Reference Rate	AED-EBOR-Reuters	Other Leg Reference Rate	AUD-CPI
Reference Rate Term Value	1	Other Leg Reference Rate Term Value	6
Reference Rate Term Unit	YEAR	Other Leg Reference Rate Term Unit	MNTH
Base Product	NRGY	Other Base Product	METL
Sub Product	COAL	Other Sub Product	NPRM
Additional Sub Product		Other Additional Sub Product	ALUM
Reference Rate Commodities	COAL-ARA-EEX	Other Leg Reference Rate Commodities	ALUMUNIUM ALLOY-LME 15 MONTH

Expected result 4 – no normalisation:

Leg 1		Leg 2	
Reference Rate	AED-EBOR-Reuters	Other Leg Reference Rate	AUD-CPI
Reference Rate Term Value	1	Other Leg Reference Rate Term Value	6
Reference Rate Term Unit	YEAR	Other Leg Reference Rate Term Unit	MNTH
Base Product	NRGY	Other Base Product	METL
Sub Product	COAL	Other Sub Product	NPRM
Additional Sub Product		Other Additional Sub Product	ALUM
Reference Rate Commodities	COAL-ARA-EEX	Other Leg Reference Rate Commodities	ALUMUNIUM ALLOY-LME 15 MONTH

3.2.7 Combined Normalisation of Cross Currency, Reference Rate and Commodity components

Alphabetically order “Notional Currency” and “Other Notional Currency”.

If Other Notional Currency is first alphabetically, swap Notional Currency <-> Other Notional Currency. The remaining attributes (Reference Rate +Reference Rate Term Value + Reference Rate Term Unit + Base Product + Sub Product + Additional Sub Product + Reference Rate Commodities +) are then moved as part of the normalisation.

Sample input 1:

Leg 1		**Leg 2**	
Notional Currency	AUD	Other Notional Currency	AED
Reference Rate	AUD-CPI	Other Leg Reference Rate	AED-EBOR-Reuters
Reference Rate Term Value	6	Other Leg Reference Rate Term Value	1
Reference Rate Term Unit	MNTH	Other Leg Reference Rate Term Unit	YEAR
Base Product	METL	Other Base Product	NRGY
Sub Product	NPRM	Other Sub Product	COAL
Additional Sub Product	ALUM	Other Additional Sub Product	
Reference Rate Commodities	ALUMUNIUM ALLOY-LME 15 MONTH	Other Leg Reference Rate Commodities	COAL-ARA-EEX

Expected result 1:

Leg 1		**Leg 2**	
Notional Currency	AED	Other Notional Currency	AUD
Reference Rate	AED-EBOR-Reuters	Other Leg Reference Rate	AUD-CPI
Reference Rate Term Value	1	Other Leg Reference Rate Term Value	6
Reference Rate Term Unit	YEAR	Other Leg Reference Rate Term Unit	MNTH

Leg 1		Leg 2	
Base Product	NRGY	Other Base Product	METL
Sub Product	COAL	Other Sub Product	NPRM
Additional Sub Product		Other Additional Sub Product	ALUM
Reference Rate Commodities	COAL-ARA-EEX	Other Leg Reference Rate Commodities	ALUMUNIUM ALLOY-LME 15 MONTH

Notional Currency and Other Notional Currency will always be different. On this basis, such product will never be normalised by Reference Rate or Base Product.

Note that if Cross Currency Rates product in Leg 1 is first alphabetically to one in Leg 2, and Commodity product in Leg 1 is second alphabetically to one in Leg 2, no normalisation will take place.

Sample input 2:

Leg 1		Leg 2	
Notional Currency	AED	Other Notional Currency	AUD
Reference Rate	AED-EBOR-Reuters	Other Leg Reference Rate	AUD-CPI
Reference Rate Term Value	1	Other Leg Reference Rate Term Value	6
Reference Rate Term Unit	YEAR	Other Leg Reference Rate Term Unit	MNTH
Base Product	NRGY	Other Base Product	METL
Sub Product	COAL	Other Sub Product	NPRM
Additional Sub Product		Other Additional Sub Product	ALUM
Reference Rate Commodities	COAL-ARA-EEX	Other Leg Reference Rate Commodities	ALUMUNIUM ALLOY-LME 15 MONTH

Expected result 2 – no normalisation:

Leg 1		**Leg 2**	
Notional Currency	AED	Other Notional Currency	AUD
Reference Rate	AED-EBOR-Reuters	Other Leg Reference Rate	AUD-CPI
Reference Rate Term Value	1	Other Leg Reference Rate Term Value	6
Reference Rate Term Unit	YEAR	Other Leg Reference Rate Term Unit	MNTH
Base Product	NRGY	Other Base Product	METL
Sub Product	COAL	Other Sub Product	NPRM
Additional Sub Product		Other Additional Sub Product	ALUM
Reference Rate Commodities	COAL-ARA-EEX	Other Leg Reference Rate Commodities	ALUMUNIUM ALLOY-LME 15 MONTH

3.2.8 Combined Normalisation of Cross Currency and Commodity components

Alphabetically order “Notional Currency” and “Other Notional Currency”. If Other Notional Currency is first alphabetically, swap Notional Currency <-> Other Notional Currency.

The remaining attributes (Base Product + Sub Product + Additional Sub Product + Reference Rate Commodities) are then moved as part of the normalisation.

Sample input 1:

Leg 1		**Leg 2**	
Notional Currency	AUD	Other Notional Currency	AED
Base Product	METL	Other Base Product	NRGY
Sub Product	NPRM	Other Sub Product	COAL
Additional Sub Product	ALUM	Other Additional Sub Product	

Leg 1		Leg 2	
Reference Rate Commodities	ALUMUNIUM ALLOY-LME 15 MONTH	Other Leg Reference Rate Commodities	COAL-ARA-EEX

Expected result 1:

Leg 1		Leg 2	
Notional Currency	AED	Other Notional Currency	AUD
Base Product	NRGY	Other Base Product	METL
Sub Product	COAL	Other Sub Product	NPRM
Additional Sub Product		Other Additional Sub Product	ALUM
Reference Rate Commodities	COAL-ARA-EEX	Other Leg Reference Rate Commodities	ALUMUNIUM ALLOY-LME 15 MONTH

Notional Currency and Other Notional Currency will always be different. On this basis, such product will never be normalised by Base Product and Other Base Product.

Note that if Notional Currency in Leg 1 is first alphabetically to Other Notional Currency, and Base Product is second alphabetically to Other Base Product, no normalisation will take place.

Sample input 2:

Leg 1		Leg 2	
Notional Currency	AED	Other Notional Currency	AUD
Base Product	NRGY	Other Base Product	METL
Sub Product	COAL	Other Sub Product	NPRM
Additional Sub Product		Other Additional Sub Product	ALUM

Reference Rate Commodities	COAL-ARA-EEX	Other Leg Reference Rate Commodities	ALUMUNIUM ALLOY-LME 15 MONTH

Expected result 2 – no normalisation:

Leg 1		**Leg 2**	
Notional Currency	AED	Other Notional Currency	AUD
Base Product	NRGY	Other Base Product	METL
Sub Product	COAL	Other Sub Product	NPRM
Additional Sub Product		Other Additional Sub Product	ALUM
Reference Rate Commodities	COAL-ARA-EEX	Other Leg Reference Rate Commodities	ALUMUNIUM ALLOY-LME 15 MONTH

3.2.9 Combined Normalisation of Cross Currency, Optionality and Commodity components

Alphabetically order “Notional Currency” and “Other Notional Currency”. If Other Notional Currency is first alphabetically, swap Notional Currency <-> Other Notional Currency.

The remaining attributes (Base Product + Sub Product + Additional Sub Product + Reference Rate Commodities) are then moved as part of the normalisation AND Option Type changes: Call<->Put, Put<->Call.

Sample input 1:

Leg 1		**Leg 2**	
Notional Currency	AUD	Other Notional Currency	AED
Option Type	Call		
Base Product	METL	Other Base Product	NRGY
Sub Product	NPRM	Other Sub Product	COAL

Additional Sub Product	ALUM	Other Additional Sub Product	
Reference Rate Commodities	ALUMUNIUM ALLOY-LME 15 MONTH	Other Leg Reference Rate Commodities	COAL-ARA-EEX

Expected result 1:

Leg 1		**Leg 2**	
Notional Currency	AED	Other Notional Currency	AUD
Option Type	Put		
Base Product	NRGY	Other Base Product	METL
Sub Product	COAL	Other Sub Product	NPRM
Additional Sub Product		Other Additional Sub Product	ALUM
Reference Rate Commodities	COAL-ARA-EEX	Other Leg Reference Rate Commodities	ALUMUNIUM ALLOY-LME 15 MONTH

Notional Currency and Other Notional Currency will always be different. On this basis, such product will never be normalised by Base Product.

Note that if Notional Currency in Leg 1 is first alphabetically to Other Notional Currency, and Base Product is second alphabetically to Other Base Product, no normalisation will take place.

Sample input 2:

Leg 1		**Leg 2**	
Notional Currency	AED	Other Notional Currency	AUD
Option Type	Put		
Base Product	NRGY	Other Base Product	METL
Sub Product	COAL	Other Sub Product	NPRM

Additional Sub Product		Other Additional Sub Product	ALUM
Reference Rate Commodities	COAL-ARA-EEX	Other Leg Reference Rate Commodities	ALUMUNIUM ALLOY-LME 15 MONTH

Expected result 2 – no normalisation:

Leg 1		**Leg 2**	
Notional Currency	AED	Other Notional Currency	AUD
Option Type	Put		
Base Product	NRGY	Other Base Product	METL
Sub Product	COAL	Other Sub Product	NPRM
Additional Sub Product		Other Additional Sub Product	ALUM
Reference Rate Commodities	COAL-ARA-EEX	Other Leg Reference Rate Commodities	ALUMUNIUM ALLOY-LME 15 MONTH

3.2.10 Combined Normalisation of Cross Currency, Optionality and Reference Rate components

Alphabetically order “Notional Currency” and “Other Notional Currency”. If Other Notional Currency is first alphabetically, swap Notional Currency <-> Other Notional Currency and change Call<->Put, Put<->Call.

The remaining attributes (Reference Rate + Reference Rate Term Value + Reference Rate Term Unit) are then moved as part of the normalisation.

Sample input 1:

Leg 1		**Leg 2**	
Notional Currency	AUD	Other Notional Currency	AED
Option Type	Call		
Reference Rate	AUD-CPI	Other Leg Reference Rate	AED-EBOR-Reuters
Reference Rate Term Value	6	Other Leg Reference Rate Term Value	1

Reference Rate Term Unit	MNTH	Other Leg Reference Rate Term Unit	YEAR

Expected result 1:

Leg 1		**Leg 2**	
Notional Currency	AED	Other Notional Currency	AUD
Option Type	Put		
Reference Rate	AED-EBOR-Reuters	Other Leg Reference Rate	AUD-CPI
Reference Rate Term Value	1	Other Leg Reference Rate Term Value	6
Reference Rate Term Unit	YEAR	Other Leg Reference Rate Term Unit	MNTH

Notional Currency and Other Notional Currency will always be different. On this basis, such product will never be normalised by Reference Rate.

Note that if Notional Currency is first alphabetically to Other Notional Currency, and Reference Rate is second alphabetically to Other Leg Reference Rate, no normalisation will take place.

Sample input 2:

Leg 1		**Leg 2**	
Notional Currency	AED	Other Notional Currency	AUD
Option Type	Put		
Reference Rate	AUD-CPI	Other Leg Reference Rate	AED-EBOR-Reuters
Reference Rate Term Value	6	Other Leg Reference Rate Term Value	1
Reference Rate Term Unit	MNTH	Other Leg Reference Rate Term Unit	YEAR

Expected result 2 – no normalisation:

Leg 1	**Leg 2**

Notional Currency	AED	Other Notional Currency	AUD
Option Type	Put		
Reference Rate	AUD-CPI	Other Leg Reference Rate	AED-EBOR-Reuters
Reference Rate Term Value	6	Other Leg Reference Rate Term Value	1
Reference Rate Term Unit	MNTH	Other Leg Reference Rate Term Unit	YEAR

3.2.11 Combined Normalisation of Cross Currency, Optionality, Reference Rate and Commodity components

Alphabetically order “Notional Currency” and “Other Notional Currency”.

If Other Notional Currency is first alphabetically, swap Notional Currency <-> Other Notional Currency and change Call<->Put, Put<->Call. The remaining attributes (Reference Rate +Reference Rate Term Value + Reference Rate Term Unit Base Product + Sub Product + Additional Sub Product + Reference Rate Commodities) are then moved as part of the normalisation.

Sample input 1:

Leg 1		**Leg 2**	
Notional Currency	AUD	Other Notional Currency	AED
Option Type	Call		
Reference Rate	AUD-CPI	Other Leg Reference Rate	AED-EBOR-Reuters
Reference Rate Term Value	6	Other Leg Reference Rate Term Value	1
Reference Rate Term Unit	MNTH	Other Leg Reference Rate Term Unit	YEAR
Base Product	METL	Other Base Product	NRGY
Sub Product	NPRM	Other Sub Product	COAL
Additional Sub Product	ALUM	Other Additional Sub Product	
Reference Rate Commodities	ALUMUNIUM ALLOY-LME 15 MONTH	Other Leg Reference Rate Commodities	COAL-ARA-EEX

Expected result 1:

Leg 1		Leg 2	
Notional Currency	AED	Other Notional Currency	AUD
Option Type	Put		
Reference Rate	AED-EBOR-Reuters	Other Leg Reference Rate	AUD-CPI
Reference Rate Term Value	1	Other Leg Reference Rate Term Value	6
Reference Rate Term Unit	YEAR	Other Leg Reference Rate Term Unit	MNTH
Base Product	NRGY	Other Base Product	METL
Sub Product	COAL	Other Sub Product	NPRM
Additional Sub Product		Other Additional Sub Product	ALUM
Reference Rate Commodities	COAL-ARA-EEX	Other Leg Reference Rate Commodities	ALUMUNIUM ALLOY-LME 15 MONTH

Notional Currency and Other Notional Currency will always be different. On this basis, such product will never be normalised by Reference Rate or by Base Product. Note that if Notional Currency in Leg 1 is first alphabetically to Other Notional Currency, and Reference Rate is second alphabetically to Other Leg Reference Rate and/or Base Product is second alphabetically to Other Base Product, no normalisation will take place.

Sample input 2:

Leg 1		Leg 2	
Notional Currency	AED	Other Notional Currency	AUD
Option Type	Put		
Reference Rate	AUD-CPI	Other Leg Reference Rate	AED-EBOR-Reuters
Reference Rate Term Value	1	Other Leg Reference Rate Term Value	6
Reference Rate Term Unit	YEAR	Other Leg Reference Rate Term Unit	MNTH

Base Product	NRGY	Other Base Product	METL
Sub Product	COAL	Other Sub Product	NPRM
Additional Sub Product		Other Additional Sub Product	ALUM
Reference Rate Commodities	COAL-ARA-EEX	Other Leg Reference Rate Commodities	ALUMUNIUM ALLOY-LME 15 MONTH

Expected result 2 – no normalisation:

Leg 1		**Leg 2**	
Notional Currency	AED	Other Notional Currency	AUD
Option Type	Put		
Reference Rate	AUD-CPI	Other Leg Reference Rate	AED-EBOR-Reuters
Reference Rate Term Value	1	Other Leg Reference Rate Term Value	6
Reference Rate Term Unit	YEAR	Other Leg Reference Rate Term Unit	MNTH
Base Product	NRGY	Other Base Product	METL
Sub Product	COAL	Other Sub Product	NPRM
Additional Sub Product		Other Additional Sub Product	ALUM
Reference Rate Commodities	COAL-ARA-EEX	Other Leg Reference Rate Commodities	ALUMUNIUM ALLOY-LME 15 MONTH

3.3 Equity Index Normalisation (non-proprietary)

For any given submission of an Equity Index name, the DSB will validate it against the existence of an ISIN and return the Index ISIN as part of the record in place of the Index name. If a valid ISIN is not on record, the Index name will be returned as input by the user. The list of Equity Indices and associated ISINs can be found in DSB Product Definitions - Annex 7 Indices on the DSB website.