

Portigon Documentation

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IT-Concept for Derivatives MCC

Jens Richelsen (DUS - 9352)

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Revision log

Date	Name	Description
05.07.2006	Richelsen	First Draft – Version 0.1
29.07.2008	Richelsen	Added Filter, rules, calculations
10.06.2009	Richelsen	Changed state rules
10.09.2010	Richelsen	Review of locations/rules
30.12.2010	Richelsen	Review
11.03.2011	Richelsen	Changes in calculation
26.07.2011	Richelsen	Bond Options
26.10.2011	Richelsen	Move of CBB books
01.07.2012	Richelsen	Portigon
12.10.2012	Richelsen	Client selection criteria
23.08.2013	R. Steger	Removed EAA client
09.04.2014	Richelsen	Removed initial config values, than can be changed in DB
28.07.2014	R. Steger	Corrections in sections 3.2, 3.1.3.21, 3.3
17.10.2014	R. Steger	More detailed explanation of the checks applied to amended trades (3.1.3.1, 3.3)
02.12.2014	R. Steger	Added PAG client
16.04.2015	R. Steger	Fixed is_rate_reset rule

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1 Introduction

The market conformity check (MCC) on a daily basis is a central requirement of the MaH's. This document covers details of the extraction and the processing of Derivatives from Summit.

2 Architecture

2.1 Data import

2.1.1 Filter criteria

The extraction of the trades from Summit is defined by the Summit filter DUTC_MCC_DER.

2.1.2 Client selection criteria

The further processing of the trade depends on the book. The field MPiRE_LU_NAME of the book from PARIS indicates the client:

Client	MPiRE LU Name (of at least one asset)	Trader Location
Summit Derivative Exotic (SDE)	STRUCTURED RETAIL ISSUANCE	Exclude 806 and all PAG locations
	STRUCTURED PRODUCT GROUP [114438]	Exclude 806 and all PAG locations
	FUNDING DUS (B) [125269]	Exclude 806 and all PAG locations
Summit Derivative PAG (DVG)	any	21
		38
		26
		56
		48
		021
		026
		038
		048
		056
		001
		022
		023
		024
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		041
		081
		082

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		084
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		866
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		871
		874
		876
		878
		888
		898
		899
		999
		VBB
		xxx
		Tokyo
		[n/a]
		Sydney
		Hongkong
		Hong Kong
		Singapore
		EAA2
		EAA2_NYC
		EAA2_HKG
		EAA2_LON
		EAA2_807
Summit Derivative Default (SDD)	Exclude MPiRE_LU_NAME from above	Exclude 806 and all locations from above, include any other

2.1.3 Field reference

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The semicolon separated ascii file contains a header records with the column headers.
The last line (indicated with a #) contains as checksum the number of business records, the start and the stop time of the business interval extracted and finally the extraction timestamp.
Example:

```
#;435;25.03.2004 08:08;25.03.2004 20:16;25.03.2004 22:44
```

The file is directly processed by the MGB tool.

A single record consists of the following fields, whereas a trade may consist of multiple records that build the various assets (During import the matching trades-assets are combined to one trade with n connected assets).

to one trade with n connected assets).							
Nr	Field Name	Data Type	Definition	Trade / Asset	Comment		
1	AsOfDate	date		T	DD/MM/YY		
2	TradeType	char		T			
3	TradeSubType	char		T			
4	TradeID	char		T			
5	DealID	char		T			
6	Version	char		T			
7	Audit Current	char		T			
8	StructureID	char		T			
9	TradeStatus	char		T			
10	Trade Ccy	char		T			
11	AssetID	char		A			
12	Call/Put	char		A			
13	Pay Ccy	char		A			
14	Notional Pay	float		A			
15	Receive Ccy	char		A			
16	Notional Receive	float		A			
17	StartDate	date		A	YYYY-MM-DD		
18	MaturityDate	date		A	YYYY-MM-DD		
19	Pay Index - Basis	char		A			
20	Pay Rate / Spread	float		A			
21	Pay Discount Curve	char		A			
22	Receive Index - Basis	char		A			
23	Receive Rate / Spread	float		A			
24	Receive Discount Curve	char		A			
25	Cap / Floor	char		A			
26	Buy/Sell	char		A			
27	Quantity	float		A			
28	Underlying	char		A			
29	Strike	float		A			
30	Style	char		A			
31	Premium Amount	float		A			
32	Premium Ccy	char		A			
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33	Expiry	date		A	YYYY-MM-DD
34	FixingDate	date		A	YYYY-MM-DD
35	Payment Date	date		A	YYYY-MM-DD
36	1st Coupon Date	date		A	YYYY-MM-DD
37	Model	char		A	
38	InstStyle	char		A	
39	Formula	char		A	
40	Product Name	char		A	
41	ProdData	char		A	
42	NPV	float		A	
43	Market Rate IR	float		A	
44	Market Rate Vola	float		A	
45	FxRate	float		A	
46	Delta	float		A	
47	Delta Ccy	char		A	
48	Vega	float		A	
49	Vega Ccy	char		A	
50	Exercised	char		T	
51	DoneDate & DoneTime	date		T	YYYY-MM-DD HH24:MI:SS
52	VerifyDate & VerifyTime	date		T	YYYY-MM-DD HH24:MI:SS
53	AmendDate & AmendTime	date		T	YYYY-MM-DD HH24:MI:SS
54	CancelDate & CancelTime	date		T	YYYY-MM-DD HH24:MI:SS
55	Comment	char		T	
56	Comment2	char		T	
57	Counterparty	char		T	
58	Internal/External	char		T	
59	Book	char		T	
60	Desk	char		T	
61	Company	char		T	
62	Trader	char		T	
63	TradeDate	date		T	YYYY-MM-DD
64	Amend User	char		T	
65	Audit DateTime	date		T	YYYY-MM-DD HH24:MI:SS
66	Audit User	char		T	
67	Term Assign Status	char		T	
68	Term TradeDate	date		T	YYYY-MM-DD
69	Term InputDate	date		T	YYYY-MM-DD
70	Term EffDate	date		T	YYYY-MM-DD
71	Reset Remark	char		T	RateReset
72	GroupID	char		T	
73	CustType	char		T	

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3 MCC logic

In this chapter, the MCC logic is described.

3.1 Trade status checks

3.1.1 General

To calculate the status of a trade a set of expressions is evaluated. If the expression returns true or if the expression is empty, the evaluation is stopped and the related state is taken as the resulting state.

An expression consists of expressions combined with the logical and-operator (&&) or the or-operator (||). An expression can also be negated with the not-operator (!) and finally braces can be used to group expressions. A nuclear expression (a condition) is then evaluated by executing a java-function of the trade.

An example:

status_name	expression
no_check	product_not_mcc_relevant is_storno
internal_deal	is_internal
high_low_check	is_net_trade
historical_check	

In the example the first expression "product_not_mcc_relevant" is extracted and the corresponding java-method is looked up in a special configuration table and executed on the trade-object. Then the next condition "is_storno" is checked against the trade-object. The result is logically combined with the or-operator. Assuming the result is true, the final state would be "no_check". Again assuming the first three expression return false, the forth state "historical_check" would become the final result.

3.1.2 Definition of trade status rules

The following rules are used to calculate the status of the trade, and indicate if a manual check is required.

status_name	check	expression
Rebooked trades	N	is_rebooking_book
No check	N	is_done is_matured is_cancelled
Auto rate reset	N	!is_npv_ammended && is_rate_reset
High ammendment PL impact	Y	is_npv_ammended && is_mcc_relevant_change
Negligible ammendment PL impact	N	is_npv_ammended
Early Termination	N	is_early_termination
Bank dOrsay dummy book	N	is_bank_d_orsay_book
Dummy book	N	is_dummy_book
IRG - Bagatelle	N	is_irg && is_bagatelle
IRG - Failed	Y	is_irg && is_out_of_price && is_standard
IRG / NON Standard - Failed	Y	is_irg && is_out_of_price
High turnover	Y	is_irg && is_high_turnover
IRG - Passed	N	is_irg
SWAP - Bagatelle	N	is_swap && is_bagatelle

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SWAP - Failed	Y	is_swap && is_out_of_price && is_standard
SWAP / NON Standard - Failed	Y	is_swap && is_out_of_price
High turnover	Y	is_swap && is_high_turnover
SWAP - Passed	N	is_swap
FRA - Bagatelle	N	is_fra && is_bagatelle
FRA - Failed	Y	is_fra && is_out_of_price
High turnover	Y	is_fra && is_high_turnover
FRA - Passed	N	is_fra
SWOPT - Bagatelle	N	is_swopt && is_bagatelle
SWOPT - Failed	Y	is_swopt && is_out_of_price && is_standard
SWOPT / NON Standard - Failed	Y	is_swopt && is_out_of_price
High turnover	Y	is_swopt && is_high_turnover
SWOPT - Passed	N	is_swopt
EXOTIC - Bagatelle	N	is_exotic && is_bagatelle
EXOTIC - Failed	Y	is_exotic && is_out_of_price && is_standard
EXOTIC / NON Standard - Failed	Y	is_exotic && is_out_of_price
High turnover	Y	is_exotic && is_high_turnover
EXOTIC - Passed	N	is_exotic
FXOPT - Bagatelle	N	is_fxopt && is_bagatelle
FXOPT - Failed	Y	is_fxopt && is_out_of_price && is_standard
FXOPT / NON Standard - Failed	Y	is_fxopt && is_out_of_price
High turnover	Y	is_fxopt && is_high_turnover
FXOPT - Passed	N	is_fxopt
BONDOPT - Bagatelle	N	is_bondopt && is_bagatelle
BONDOPT - Failed	Y	is_bondopt && is_out_of_price && is_standard
BONDOPT / NON Standard - Failed	Y	is_bondopt && is_out_of_price
High turnover	Y	is_bondopt && is_high_turnover
BONDOPT - Passed	N	is_bondopt

3.1.3 Definition of the conditions

3.1.3.1 Condition: is_mcc_relevant_change

In addition to the trade report, an amendment report is fed into the MGB database. The amendment data holds entries for changed fields of a trade (trade id, old trade version, new trade version, field name, old field value, new field value, value difference).

An amendment entry is linked to the current as well as to the previous version of a trade in the MGB database.

The analysis of the amended fields to indicate if changes are “mcc relevant” can be configured.

This is achieved by placing entries into the MGB Derivatives configuration table that use names that conform to certain patterns:

1. **AMEND,<field name from amendment report>,<comparison type>**

Such entries cause MGB to compute the difference between old and new value in the designated field from the amendment report, and to identify a change as “mcc relevant” if that difference is higher than the configuration value.

“Comparison type” is one of:

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- a. **NUMBER_REL**
the difference must not exceed the specified percentage of the old value
- b. **NUMBER_ABS**
the difference must not exceed the specified absolute value
- c. **DATE**
the difference must not exceed the specified number of days.

2. **AMEND_FIELD_LIST**

Such entries cause MGB to identify *any* amendment that is reported for one of the (comma-separated) fields from the configuration value as “mcc relevant”.

A typical example might be a configuration item like the following, which practically means the NPV change for amended trades is allowed to be in a range up to EUR 10000, otherwise it will be flagged as `is_mcc_relevant_change`:

Configuration Key	Configuration Value
AMEND,NPV,NUMBER_ABS	10000

3.1.3.2 Condition: **is_npv_ammended**

Additionally to the trade-report, there is an amendment-report fed into the MGB-database. The amendment data holds entries for changed fields of a trade (trade id, old trade version, new trade version, old field value, new field value, value difference).

The amendment entries link to the current trade to the previous version of the trade in the mgb database.

If an amendment-entry and the corresponding previous trade version are found in mgb and an npv-change is indicated, the condition returns true.

3.1.3.3 Condition: **is_done**

The field “tradeStatus” indicates this condition.

If the value is “DONE”, it returns true.

3.1.3.4 Condition: **is_canceled**

The field “tradeStatus” indicates this condition.

If the value is “CANC”, it returns true.

3.1.3.5 Condition: **is_matured**

The field “tradeStatus” indicates this condition.

If the value is “MAT”, it returns true.

3.1.3.6 Condition: **is_rebooking_book**

Returns true if the field “BookId” has a value that is configured in the table T42_MGB_CONFIGURATION with the key “REBOOKING_BOOKS”.

3.1.3.7 Condition: **is_early_termination**

The field “TermAssignStatus” indicates this condition.

If the value is “TERM”, it returns true.

3.1.3.8 Condition: **is_rate_reset**

The field “ResetRemark” indicates this condition.

If the value is “RateReset”, it returns true.

3.1.3.9 Condition: **is_bank_d_orsey_book**

Returns true if the book is included in a list in the database table T42_MGB_CONFIGURATION. The key of the entry is BANK_D_ORSEY_BOOKS.

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3.1.3.10 Condition: is_dummy_book

Returns true if the book is included in a list in the database table T42_MGB_CONFIGURATION. The key of the entry is DUMMY_BOOKS.

3.1.3.11 Condition: is_standard

Returns true if the value of the field "productname" is empty.

3.1.3.12 Condition: is_irg

Returns true if the value of the field "tradeType" is "IRG".

3.1.3.13 Condition: is_swap

Returns true if the value of the field "tradeType" is "SWAP".

3.1.3.14 Condition: is_fra

Returns true if the value of the field "tradeType" is "FRA".

3.1.3.15 Condition: is_swopt

Returns true if the value of the field "tradeType" is "SWOPT".

3.1.3.16 Condition: is_exotic

Returns true if the value of the field "tradeType" is "EXOTIC".

3.1.3.17 Condition: is_fxopt

Returns true if the value of the field "tradeType" is "FXOPT".

3.1.3.18 Condition: is_bondopt

Returns true if the value of the field "tradeType" is "BONDOP".

3.1.3.19 Condition: is_bagatelle

The calculation of the turnover is described below and depends on the trade type.

If the absolute turnover is positive and smaller than a threshold, the condition returns true.

The thresholds are configured in the database in the table T42_MGB_CONFIGURATION and depend on the product_type:

Product	Database Key
IRG	IRG_BAGATELLE_LIMIT
SWAP	SWAP_BAGATELLE_LIMIT
FRA	FRA_BAGATELLE_LIMIT
SWOPT	SWAPTION_BAGATELLE_LIMIT
FXOPT	FXOPT_BAGATELLE_LIMIT
BONDOP	BONDOPT_BAGATELLE_LIMIT
EXOTIC	EXOTIC_BAGATELLE_LIMIT

The values are supposed to be in EUR.

3.1.3.20 Condition: is_high_turnover

The calculation of the turnover is described below and depends on the trade type.

If the absolute turnover is greater than a threshold, the condition returns true.

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The threshold is configured in the database in the table T42_MGB_CONFIGURATION and the key DERIVATIVE_TURNOVER_LIMIT. The value are supposed to be in EUR.

3.1.3.21 Condition: is_out_of_price

The calculation of the deviation is described below and depends on the trade type.

Returns true if the deviation is larger than the tolerance. This is always a “greater-than” comparison of the unmodified deviation as stored in the trade to the literal numeric value stored as “absolute” (preferred) or “relative” number in the trade’s price check category. This effectively means that it makes no difference to store tolerances as "absolute" vs. "relative".

3.2 Instrument naming rules

Product	Naming Rule
IRG	IRG_<tradeSubType: e.g. CAP, FLOOR>_<tradeCurrency>_<STD, NON>
SWAP	SWAP_<tradeSubType: e.g. CCYSWAP, IRSWAP>_<tradeCurrency>_<STD, NON>
FRA	FRA_<tradeType>_<tradeCurrency>
SWOPT	SWOPT_< tradeSubType: e.g. CCYSWAP, IRSWAP , NONE>_<tradeCurrency>_<STD, NON>
FXOPT	FXOPT_<payCurrency>_<receiveCurrency>_<instStyle: e.g. EURO>_<STD, NON>
BONDOP	BONDOP_<tradeCurrency>_<instStyle: e.g. EURO>_<STD, NON>
EXOTIC	EXOTIC_<tradeCurrency >_<STD, NON>

The name part <STD, NON> depends on the field productName. Any productName is indicated by “NON”, an empty productName by “STD”.

3.3 Calculations/tolerances

The calculation of the turnover and the deviation is shown in the following table:

Name	Turnover	Deviation	Tolerance
IRG_*_STD	npv + premium	turnover / vega	Value in basepoints
IRG_*_NON	npv + premium	turnover / notional	Value in percent
SWAP_*_STD	npv	turnover / delta	Value in percent
SWAP_*_NON	npv	turnover / notional	Value in percent
FRA_*	npv	turnover / delta	Value in percent
SWOPT_*_STD	npv + premium	turnover / vega	Value in 10 basepoints(in vol)
SWOPT_*_NON	npv + premium	turnover / notional	Value in percent
FXOPT_*_STD	npv + premium	turnover / vega	Value in basepoints

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FXOPT_*_NON	npv + premium	turnover / notional	Value in percent
BONDOP_*_STD	npv + premium	turnover / vega	Value in basepoints
BONDOP_*_NON	npv + premium	turnover / notional	Value in percent
EXOTIC_*_STD	SUM(npv + premium)	turnover / (vega + delta)	Value in basepoints
EXOTIC_*_NON	SUM(npv + premium)	turnover / delta	Value in basepoints

All values in the table above are multiplied with the fx-rate to have EUR-values.

The tolerance check compares the result of the deviation directly to the tolerance number value (e.g. a deviation value of 4.9 – whether it actually resembles a percentage or not – is smaller than a 5 “percent” value from the associated price check tolerance setting, and one of 5.1 is larger). The naming “percent” or “basepoint” in the above table does not have any meaning for the calculation. Any of these three exemplary tolerances represent the same: absolute tolerance of “5”, relative tolerance of “5 percent”, relative tolerance of “5 basepoints”.

These are the default values and can be changed for special currencies or tradeSubTypes.

If a “relative” and an “absolute” tolerance are defined for a price check category, only the “absolute” tolerance is used while the “relative” value is ignored.

If the trade is amended (see “Condition: is_npv_amended”), the turnover and the deviation are set to zero and the price check tolerances are not used. Instead the change of the npv is checked as detailed in 3.1.3.1.

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