Bonds BPM: Bond Theoretical Prices and Instrument Configuration – BTHEO

The 'Bond Theoretical Prices and Instrument Config' file covers Fixed Income (FI) transactions, containing information relevant for Prisma Bond Portfolio Margining (BPM). The file contains a structured description of the FI credit clusters – which are referred to as "bond clusters" in the file -, including the cluster-specific parameters for LA calculation; it contains a structured description of the instruments themselves including DV01 on instrument level; it contains theoretical (scenario) prices for replication of the P&L distribution basis for risk measure calculation; it contains scenario prices under the key tenor-specific shift scenarios for CMA calculation, as well as reference to FX rate sets. Respective figures are reported in product- as well as in clearing currencies.

General File Structure

The bond theoretical price file is structured according to the following rules:

Sections P: For all bond products ids[1]

Section BC: For all bond clusters defined for the current product

Section LA: Parameters related to Liquidity Adjustment and defined on bond cluster level (some items may repeat on this row, in case they represent array values)

Section I: For all instruments within the current bond cluster

Section N: Neutral scenario of the current instrument

Section LGS: For all Liquidation Group Splits associated with the instrument

Section RMS: For all risk measure sets associated with the LGS

Section LH: Liquidation horizon for the RMS

Section FX: FX rate set for the series

Section SP: Scenario prices for RMS

Section CMA: Scenario prices per CMA bucket

Next risk measure set

Next Liquidation Group Split

Next instrument

Next bond cluster

Next Product

Fields

Section	Field name	Value type[2]	Value example	Remark
Product P	Bond Product ID	String (16)	PFBONDS	
	Liquidation Group	String (30)	PFI01	Liquidation group to which the product is assigned to

[1] Please note that certain fields relate to proprietary pricing processes and are provided solely as supplementary information; they are not pertinent to the risk model. These fields, for example, comprise "Bond Type", "Coupon Frequency", or "Principal Redemption Pay Date".

[2] The number in the bracket indicates how many digits after the decimal point are provided for numbers and the maximum length of the field for String fields.

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Section	Field name	Value type[2]	Value example	Remark
	LA Global Cap	Number (6)	1000000.000000	Upper bound for the absolute value of the Liquidity Factor to prevent the occurrence of explosive values
Bond Cluster BC	Cluster ID Mnemonic	String (32)	EUR.GOV.DE	Currently, the in-scope credit clusters of the Bond Portfolio Margining comprise the four sovereign issuers Germany, France, Italy, Spain, and AA- and AAA-rated Supranationals.
Liquidity Adjustment LA	Cluster VaR	Number (6)	1.123456	Stylized market risk measure based on a synthetic FI portfolio to cover market risk relative difference between the member survey date and the LA calculation date The relative outstanding amount parameters are represented in the TE file as a list of triplet values with lower bound, value and default flag, i.e. {decimal, decimal, boolean}
	Gamma	Number (6)	0.250000	Fraction of sum of absolute DV01s per position at which the effective exposure is floored to ensure sufficient amount of LA for (close to) delta neutral portfolios.
	Intercept h	Number (7)	1.123456	Intercept of the linear price impact function derived from price impact data from a liquidity survey among clearing members.
	Slope g	Number (7)	1.1234567	Slope of the linear price impact function.
	Relative Outstanding Amount Buckets Lower Bound	Number (6)	0.123456	Lower bound of bucket for determining the relative outstanding amount based on the ratio of position size and amount outstanding (one value for each bucket segmenting the range from 0…1)
	Relative OutstandingAmount Buckets Value	Number (6)	0.123456	Relative outstanding amount assigned to the respective relative outstanding amount bucket (one value for each bucket)
	Relative Outstanding Amount Buckets Default Flag	Boolean	false	Default relative outstanding amount bucket if no ratio of position size and outstanding amount can be computed (one value for each bucket)
Instrument I	ISIN	String (12)	DE000BU3Z047	
	Bond Type	String (12)	FIXED RATE, ZERO COUPON	
	Issuer	String (10)	WM:458634	Issuer ID to identify corresponding issuers across different instruments.
	Country	String (4)	DE	Code for supranational issuers is SNAT

Section	Field name	Value type[2]	Value example	Remark
	NSS Fitting Eligible	Boolean	true	Indicates whether instrument is eligible for fitting of NSS yield curve for the respective bond cluster. Differentiation is required for CMA aggregation purposes.
	Maturity Date	Date (YYYY-MM-DD)	2025-11-30	
	Days to Maturity	Integer	500	
	Business Days to Maturity	Integer	386	
	Rating	String (3)	AAA	
	Amount Outstanding	Number (6)	1000000000.123456	
	Principal Currency Code	String (3)	EUR	
	Principal Notional	Number (6)	1000.123456	
	Principal Redemption Pay Date	Date (YYYY-MM-DD)	2025-11-30	
	Principal Redemption Pay Amount	Number (6)	90.123456	Given in percent
	Coupon Currency Code	String (3)	EUR	
	Coupon Payment Frequency	String (12)	ANNUAL, SEMIANNUAL, QUARTERLY, MONTHLY, WEEKLY, DAILY, AT_MATURITY	
	Coupon Calendar	String (16)	TARGET, SWITZERLAND, UNITEDKINGDOM, JAPAN, SWEDEN, DENMARK, NORWAY, UNITEDSTATES, ENGLAND	
	Coupon First Date	Date (YYYY-MM-DD)	2023-12-15	
	Coupon Next to Last Date	Date (YYYY-MM-DD)	2025-10-15	
	DV01	Number (6)	1.123456	Used for effective exposure calculation within LA calculation
	Liquidity Flag Value	Number (6)	0.970000	Used for liquidity factor calculation within LA calculation

Section	Field name	Value type[2]	Value example	Remark
	Settlement Days	Integer	2	
	Coupon Rate	Number (6)	4.250000	Given in percent
	Fund Start Date	Date (YYYY-MM-DD)	2023-12-15	
Neutral Price N	Neutral Scenario Price	Number (6)	100.123456	Current (dirty) price of the bond also denoted as neutral scenario
LGS	Liquidation Group Split	String (30)	PFI01_HP2	Liquidation Group Split to which the position is assigned
	Default LGS Flag	String (1)	Y	Y – For liquidation group splits relevant for Prisma only margining N – otherwise
RMS	Risk Measure Set	String (30)	SP_VAR_PFI01_BOND	Several risk measure sets can exist for every instrument
Holding Period LH	Liquidation Horizon	Integer	2	Margin Period of Risk (MPOR), i.e. Liquidation Period used for the filtered and unfiltered historical scenarios, in business days.
FX	FX Set	String (10)	FX1	Set of FX scenarios used for this instrument, cf. exchange rate file.
SP	Scenario Prices	Number (6)	123.123456; 234.123456; 102.123456…	The first scenario price is associated with the first scenario, the second price to the second scenario and so on.
Compression Adjustment CMA	Key Time Pillar	Integer	180	Tenor of the zero-rate term structure that is shifted (with a triangular shift function), given in days, e.g., 3600 for the 10y tenor. The required CMA parameters are represented in the TE file as a list of triplet values.
	CMA Delta Up	Number (6)	-0.096123	Theoretical instrument P&L under the Up Shift at the given Key Time Pillar.
	CMA Delta Down	Number (6)	0.092123	Theoretical instrument P&L under the Down Shift at the given Key Time Pillar.

Example

The structure of an exemplary input file is given as:

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P;PFBONDS;PFI01;1000000.000000
BC;123;EUR.GOV.DE
LA;-0.141947;0.050000;0.000000;0.000003;0.000000;1.000000;true;
0.100000;0.900000;false;0.900000;1.000000;false
I;DE0009652644;...
N;106.285725
LGS;PFI01_HP2;Y
RMS;FILTERED_HISTORICAL_VAR_2
LH;2
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FX;FX1
SP;119.274412;120.055014;123.000001;…
CMA;150;0.318213;0.318213;180;0.328213;0.328213;360;0.338213;0.338213
RMS;SIMPLE_STRESS_VAR_2
LH;2
FX;FX1
SP;0.000001;0.000001;4.251057;0.000001;…
CMA;150;0.318213;0.318213;180;0.328213;0.328213;360;0.338213;0.338213
I;DE0009652645;...
…
*EOF*;P;99999999;20240613;EUREX;EUREX;OI;BOND THEORETICAL PRICES AND
INSTRUMENT CONFIG
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