ActiveViam

Input Data

Atoti FRTB

5.3

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Input Data

This document contains the file formats for the CSV files that can be used by clients as input to the Atoti FRTB Reference Implementation, for SA, IMA, and IMA Summary.

Sample input files are included in the source distribution. These files are loaded during testing of the reference implementation and provide examples of each of the file types.

What each page shows

For each input file, the format for each row (or record) is shown, followed by a table defining all the fields in a record.

File name patterns

Atoti FRTB uses glob patterns with the (*) asterisk wildcard character to identify the relevant file names for each category of input file. So you can add characters before and after the listed names, such as timestamps or ID numbers.

For example, the pattern **/FXData*.csv matches all CSV files with names beginning with the string “FXData” in any subdirectory.

In this guide, the File Pattern Match section for each of the input files specifies the glob pattern used. However, the glob prefix is omitted as it is now injected automatically.

You can customize the glob patterns in frtb-data-load.properties.

This chapter describes the following:

- *Core Configuration Files*
- *CRIF Files*
- *Reference and Booking Files*
- *SA Input File Formats*
- *IMA Input Files*
- *Stress Calibration Input Files*

Core Configuration Files

The following parameters files are used in the ActiveViam FRTB solution calculations:

- Commodity_BucketRiskWeights

- Commodity_IntraBucketCorrelations
- CSR_BucketsRiskWeights_NONSEC
- CSR_BucketsRiskWeights_SECCTP
- CSR_BucketsRiskWeights_SECNONCTP
- CSRNS_Bucket_Correlations
- Default_Risk_Weights
- EQTY_BucketsRiskWeights
- ERBA_Risk_Weight
- FRTBParameters
- FX_Risk_Weight_Overrides
- FX_Special_Crosses
- GIRR_Correlation_Overrides
- GIRR_Delta_Weightings
- GIRR_Major_Currency
- Instrument_LGD
- LiquidityHorizons
- Obligor_Risk_Weights
- Option_Residual_Maturity_Vertices
- ParameterSet
- Sensitivity_Scaling
- Vega_Liquidity_Horizons
- Vertices
- CSR non-Sec Buckets
- CSR Sec CTP Buckets
- CSR Sec non-CTP Buckets
- DRC Seniority Description

CRIF Files

The Solution natively uses the *SBM Sensitivity* and *SA DRC Trade Level* input files to load sensitivity information. Alternatively, you can use CRIF (Common Risk Interchange Format) to replace the native sensitivity input files.

The native formats, however, offer enhanced support and features such as:

- multi-jurisdiction support: CRIF files must be created for a specific jurisdiction, native files can be used for multiple jurisdictions.
- support for dividing FX CVR by 1.5 (MAR 21.98)
- reusing Delta sensitivities for Curvature “delta stripping”

CRIF input files should be created according to the standard ISDA CRIF. For details on how to become a

licensed CRIF user, contact ISDA at analytics@isda.org.

> NOTE
>
> When using CRIF, unsupported variants aren't loaded into the cube. Supported variants include:
>
> - Vega Variant 1
> - Curvature Variant 1a
> - DRC non-Sec Variant 1
> - DRC Sec non-CTP Variants 1 and 2
> - DRC Sec CTP Variant 1

Reference and Booking Files

These files are shared between IMA, IMA Summary and SA:

- *Book Description*
- *Book Parent Child v1*
- *Book Parent Child v2*
- *Categories*
- *Desk Description*
- *FX Rates*
- *IRT Desk Groups*
- *Legal Entity Attributes*
- *Legal Entity Parent Child*
- *Trade Attributes*

Book Description

This file provides a description of books.

This Book Description file type is identified using the pattern: ****/{BookDescription,BookDescription}*.csv{,.gz}** (as specified by book-description.file-pattern). This file is loaded using the **BookDescription** topic.

Field	Key	Null	FieldType	Description	Example
Book	Y	N	String	Name of the Book.	

Desk	N	Y	String	Name of the Desk to which the Book belongs.
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.
IRT Flag	N	Y	'Y' or 'N'	Indicates whether the desk is an Internal Risk Transfer (IRT) desk. ACR is calculated separately for desks flagged as IRT. Defaults to 'N'

These files are expected to include all combinations of "Book", "IRT Group", and "AsOfDate".

Book Parent Child v1

This file provides a description of the organisation's book structure, using a parent/child relationship, including identification and description of desks.

This Book Parent Child v1 file type is identified using the pattern: ****/BookParentChild*[!.v2].csv{,.gz}** (as specified by book.parent-child.file-pattern). This file is loaded using the **TOPIC_COMBINED_BOOK_PARENT_CHILD_AND_DESK** topic.

Field	Key	Null	FieldType	Description	Example
Name	Y	N	String	Name of the node in the Book/Desk hierarchy.	
Parent	N	Y	String	Name of the parent node (or null if there is no parent).	
FRTBDesk	N	Y	'Y' or 'N'	This is set to 'Y' if this node is a desk for the purposes of FRTB. If so, then 'FRTBApproach' and 'PLA Zone' are populated – otherwise they are empty.	
Category	N	Y	String	Optional category for the node (and all Descendant nodes). This field is only used if the property categories-hierarchy.enabled=true is set.	

FRTBApproach	N	Y	'SA' or 'IMA'	For FRTB desks, this field indicates which model (i.e. approach) should be used for calculating the Risk Charge (either 'SA' or 'IMA'). If not an FRTB desk, this field is empty.
PLA Zone	N	Y	'R', 'A', or 'G'	For FRTB desks, this field indicates which zone the desk falls into according to the PLA test metrics [MAR32.42]. If not an FRTB desk, this field is empty.
IRT Desk	N	Y	'Y' or 'N'	Indicates whether the desk is an Internal Risk Transfer (IRT) desk. ACR is calculated separately for desks flagged as IRT.
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.

WARNING

THIS FILE IS DEPRECATED

Flattened Hierarchy

After this file is loaded into the datastore, a datastore listener will trigger some further processing that will flatten the hierarchy.

The tree is walked and each node is assigned a level in the **BookHierarchy** hierarchy. The leaf nodes of the tree become the books in the **Book** hierarchy, and each trade is mapped to a book.

It is expected that every path from the top nodes to the leaf nodes will pass through exactly one desk. This way the Desk, FRTB Approach (SA/IMA), PLA Zone (R/A/G or "N/A"), and IRT flag (Y/N) can be set for each leaf node.

Book Parent Child v2

This file provides a description of the organisation's book structure, using a parent/child relationship, including identification and description of desks.

This Book Parent Child v2 file type is identified using the pattern: ****/BookParentChild*.v2.csv{,.gz}** (as specified by book-parent-child.v2.file-pattern). This file is loaded using the **BookParentChild** topic.

Field	Key	Null	FieldType	Description	Example
Name	Y	N	String	Name of the node in the Book/Desk hierarchy.	
Parent	N	Y	String	Name of the parent node (or null if there is no parent).	
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.	

Categories

This file provides a description of desks.

This Categories file type is identified using the pattern: ****/Categories*.csv{,.gz}** (as specified by categories.file-pattern). This file is loaded using the **CategoriesSource** topic.

Field	Key	Null	FieldType	Description	Example
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.	
Node	Y	N	String	Name of the Node in the parent/child hierarchy.	
Category	N	N	String	Category for the node (and all Descendant nodes).	

This file is only used if the property categories-hierarchy.enabled=true is set.

Desk Description

This file provides a description of desks.

This Desk Description file type is identified using the pattern: ****/DeskDescription*{,.v1}.csv{,.gz}** (as specified by desk-description.file-pattern). This file is loaded using the **DeskDescription** topic.

Field	Key	Null	FieldType	Description	Example

Name	Y	N	String	Name of the Desk.
FRTBApproach	N	Y	'SA' or 'IMA'	For FRTB desks, this field indicates which model (i.e. approach) should be used for calculating the Risk Charge (either 'SA' or 'IMA'). If not an FRTB desk, this field is empty.
PLA Zone	N	Y	'R', 'A', or 'G'	For FRTB desks, this field indicates which zone the desk falls into according to the PLA test metrics [MAR32.42]. If not an FRTB desk, this field is empty.
deprecated	N	Y		IRT_Desk flag is now found in BookDescription
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.

FX Rates

This file provides FX spot rates used for currency conversion.

This FX Rates file type is identified using the pattern: **`**/FXData*.csv`** (as specified by `fx.data.file-pattern`). This file is loaded using the **FXRates** topic.

Field	Key	Null	FieldType	Description	Example
BaseCurrency	Y	N	String	The left side of the currency pair.	
CounterCurrency	Y	N	String	The right side of the currency pair	
Rate	N	N	Double	Forex rate between the two currencies.	
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.	

FXHistorical Topic

The FXHistorical topic has the same file format as FXData.csv. The difference is the file location.

- When loading the FXRates topic, the as-of date is provided in the scope and the file will be loaded from the corresponding directory.
- When loading the FXHistorical topic, no as-of date is provided in the scope and all FXData.csv files from the historical directory are loaded.

FX Conversion Formula

Input values are converted into the same currency according to this formula:

$$Value_{\text{target currency}} = Value_{\text{input currency}} \cdot FxRate$$

FxRate Lookup

The $FxRate$ for converting the input currency value into the target currency value is obtained based on the data in the FX Rates data store.

1. In most cases, the algorithm will simply look up the rate based on these key fields: AsOfDate, BaseCcy, CounterCcy. Initially the algorithm searches for the rate that has AsOfDate, input currency, target currency in the key fields. See the Direct Lookup example below.
2. If the rate was not found, the algorithm will try the indirect lookup - search rate by AsOfDate, target currency, input currency and take the reciprocal of the rate if found.
3. If the rate is still not found at this stage, the algorithm will compute the rate using the FX crosses via the "CommonCcy" configured in the application properties (fx-rates.common-currency in the application.properties):
4. Search for the rate from CommonCcy to input currency, let this result be referred to as "baseCcyComponent"
5. Search for the rate from commonCcy to the target currency, let this result be referred to as "counterCcyComponent"
6. Compute the FxRate as counterCcyComponent divided by baseCcyComponent. See the FX Crosses example below.

Direct Lookup Example

- Let's imagine we want the values expressed in CHF.
- The delivered risk for a position is 100 EUR: 100 is the risk value in units of input currency EUR.
- The delivered FxRates for the business date:

AsOfDate	BaseCcy	CounterCcy	FxRate

AsOfDate	BaseCcy	CounterCcy	FxRate
2019-01-01	EUR	CHF	1.0794

The risk in CHF will be displayed as 107.94 = 100 x 1.0794.

FX Crosses Example

- Let's imagine we wish to see the values expressed in CHF.
- The delivered risk for a position is 100 KZT: 100 is the risk value in units of input currency KZT.
- The common currency is set to EUR, and the fx crosses will use EUR as the common currency.
- The relevant FxRates for the business date:

AsOfDate	BaseCcy	CounterCcy	FxRate
2019-01-01	EUR	CHF	1.0794
2019-01-01	EUR	KZT	370.0427

With CHF as the target currency, the rate applicable to KZT exposure is computed as follows:

- baseCcyComponent = EUR/KZT = 370.0427
- counterCcyComponent = EUR/CHF = 1.0794

The KZT/CHF rate is computed as 1.0794/370.0427 = 0.002916961.

Hence, the risk in CHF will be displayed as 0.2916961 = 100 x 0.002916961.

IRT Desk Groups

This file provides a way to provide multiple membership groups for IRT Desk.

This IRT Desk Groups file type is identified using the pattern: ****/IRTDeskGroups*.csv{,.gz}** (as specified by irt-desk-groups.file-pattern). This file is loaded using the **IRTDeskGroups** topic.

Field	Key	Null	FieldType	Description	Example
Book	Y	N	String	Name of the Book.	
IRT Group	N	Y	String	Name of the membership group.	

IRT Flag	N	Y	'Y' or 'N'	Indicates whether the desk is an Internal Risk Transfer (IRT) desk. ACR is calculated separately for desks flagged as IRT. Defaults to 'N'
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.

Legal Entity Attributes

This file contains a description of the legal entities.

This Legal Entity Attributes file type is identified using the pattern: ****/LegalEntityAttributes*.csv** (as specified by legal-entity.attributes.file-pattern). This file is loaded using the **LegalEntityAttributes** topic.

Field	Key	Null	FieldType	Description	Example
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.	
LegalEntity	Y	N	String	The Legal Entity being described.	
NettingSet	N	N	String	The Netting Set that this Legal Entity belongs to. Capital Charges can be calculated independently for netting set.	

Legal Entity Parent Child

This file provides a description of the Group's Legal Entity structure, using a parent/child relationship.

This Legal Entity Parent Child file type is identified using the pattern: ****/LegalEntityParentChild*.csv** (as specified by legal-entity.parent-child.file-pattern). This file is loaded using the **LegalEntityParentChild** topic.

Field	Key	Null	FieldType	Description	Example
Name	Y	N	String	Name of the Legal Entity.	
Parent	N	Y	String	Name of the parent Legal Entity (or null if there is no parent).	

AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.

Flattened Hierarchy

After this file is loaded into the datastore, a DLC Topic will trigger some further processing that will flatten the hierarchy.

The tree is walked and each node is assigned a level in the **LegalEntityHierarchy** hierarchy. The leaf nodes of the tree become the legal entities in the **LegalEntity** hierarchy, and each trade is mapped to a legal entity.

Trade Attributes

This file describes the trade, including book and legal entity, notional and present value. Fields are applicable to all components except where indicated.

This Trade Attributes file type is identified using the pattern: ****/{Trade_Attributes,SA_Trades}*.csv** (as specified by trade.attributes.sa.trades.file-pattern). This file is loaded using the **Trade_Attributes** topic.

Field	Key	Null	FieldType	Description	Example
AsOfDate	Y	N	Date[YYYY-MM-DD]	Timestamp (at close of business) for the data.	
TradeId	Y	N	String	If coming from multiple systems may need to prepend source system to the id for uniqueness.	"IR_IRSWAP_LIBOR3M", "EQ_12345677", etc. –
Book	N	N	String	The book to map the trade to (must match the node in the Book Hierarchy).	
Legal Entity	N	N	String	Legal Entity to map the trade to (must match the node in the Legal Entity Hierarchy).	
Notional	N	Y	Double	Notional of trade/position. *Use of this field for DRC & RRAO is deprecated*	

NotionalCcy	N	Y	String	Currency of notional. Required whenever notional is provided.
PresentValue	N	Y	Double	*Use of this field for DRC and Curvature present value is deprecated*
PVCcy	N	Y	String	Currency of present value. Required whenever present value is provided.
ResidualRisk	N	Y	'Y' or 'N'	Deprecated - Applicable to RRAO only Indicates trade/position subject to residual risk add-on.
ExoticUnderlying	N	Y	'Y' or 'N'	Deprecated - Applicable to RRAO only If yes and residual risk, risk weight = 1% otherwise if residual risk, weight = .1%.
OtherResidualRiskType	N	Y	String	Deprecated - Applicable to RRAO only Optional data - valid if ExoticUnderlying = 'N'. Suggested valid values are "GAP", "CORRELATION","BEHAVIORIAL", "OTHER".
TradeDate	N	Y	Date[YYYY-MM-DD]	The date on which the trade took place

Sensitivity Scale Category	N	Y	String	The category to use for scaling the SBM sensitivities. This matches the categories in the Sensitivity Scaling configuration file. If unused, or the category doesn't match, no scaling is applied.	Business Day 1
RRAO Category	N	Y	String	Deprecated - Applicable to RRAO only This field is used as a key for modifying RRAO attributes. It is used for the overrides as part of the multi-jurisdictional support; it is not used directly in calculations.	

RRAO Trades

If the ResidualRisk flag is set, then a row is added to the **SaSensitivities** store. This row becomes a fact in the SA cube and is used for RRAO calculations.

Stores

The contents of this file are split between the (common) **TradeMapping** store which maps a trade to book and legal entity (and contains the TradeDate), and the (SA-only) **SATradeDescription** store which contains SA-specific details of the trade, including Notional, PV, and RRAO details.

SA Input File Formats

This section describes our own input file formats used for the Standardized Approach. These can be used as an alternative to the *CRIF format*.

- *Bucket Files*
- *DRC Files*
- *Overrides*
- *RRAO Files*

- *SBM Sensitivity-specific Files*

Bucket Files

- *Commodity Buckets*
- *CSR non-Sec Bucket Descriptions*
- *CSR Sec CTP Bucket Descriptions*
- *CSR Sec non-CTP Bucket Descriptions*
- *Equity Bucket Descriptions*
- *Equity Buckets*

Commodity Buckets

This file provides a mapping from Commodity to Commodity Bucket.

When the SBM sensitivity files (*Curvature*, *Delta*, or *Vega*) omit the Bucket field, it is filled from this Commodity Buckets file. To take advantage of this, the buckets file must be loaded before (or at the same time as) the Curvature, Delta, or Vega file.

This Commodity Buckets file type is identified using the pattern: ****/Commodity_Buckets*.csv** (as specified by commodity.buckets.file-pattern). This file is loaded using the **CommodityBuckets** topic.

Field	Key	Null	FieldType	Description	Example
Bucket	N	N	String	Bucket number (e.g. 1 - 11)	
UnderlyingCommodity	Y	N	String	Underlying commodity from sensitivities file	
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.	

CSR non-Sec Bucket Descriptions

This file provides a description of CSR non-Sec buckets, including canonical values for Credit Rating and Sector.

When the SBM sensitivity files (*Curvature*, *Delta*, or *Vega*) omit the rating and/or sector fields, they can be filled from this CSR non-Sec Bucket Descriptions file. To take advantage of this, the bucket description file must be loaded before (or at the same time as) the Curvature, Delta, or Vega file.

This CSR non-Sec Bucket Descriptions file type is identified using the pattern:

****/CSR_Bucket_Description_NONSEC*.csv** (as specified by csr.bucket.description.non-sec.file-pattern). This file is loaded using the **CSR_BUCKET_DESCRIPTION_NONSEC** topic.

Field	Key	Null	FieldType	Description	Example
Bucket	Y	N	String	Bucket number (e.g. 1 - 18)	
RatingCategory	N	N	String	Logical group of ratings	
SectorCategory	N	N	String	Logical group of sectors	
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.	

CSR Sec CTP Bucket Descriptions

This file provides a description of CSR Sec CTP buckets, including canonical values for Credit Rating and Sector.

When the SBM sensitivity files (*Curvature*, *Delta*, or *Vega*) omit the rating and/or sector fields, they can be filled from this CSR Sec CTP Bucket Descriptions file. To take advantage of this, the bucket description file must be loaded before (or at the same time as) the Curvature, Delta, or Vega file.

This CSR Sec CTP Bucket Descriptions file type is identified using the pattern: ****/CSR_Bucket_Description_SECCTP*.csv** (as specified by csr.bucket.description.sec-ctp.file-pattern). This file is loaded using the **CSR_BUCKET_DESCRIPTION_SECCTP** topic.

Field	Key	Null	FieldType	Description	Example
Bucket	Y	N	String	Bucket number (e.g. 1 - 16)	
RatingCategory	N	N	String	Logical group of ratings	
SectorCategory	N	N	String	Logical group of sectors	
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.	

CSR Sec non-CTP Bucket Descriptions

This file provides a description of CSR Sec non-CTP buckets, including canonical values for Credit Rating and Sector.

When the SBM sensitivity files (*Curvature*, *Delta*, or *Vega*) omit the rating and/or sector fields, they can be

filled from this CSR Sec non-CTP Bucket Descriptions file. To take advantage of this, the bucket description file must be loaded before (or at the same time as) the Curvature, Delta, or Vega file.

This CSR Sec non-CTP Bucket Descriptions file type is identified using the pattern: ****/CSR_Bucket_Description_SECNONCTP*.csv** (as specified by csr.bucket.description.sec-non-ctp.file-pattern). This file is loaded using the **CSR_BUCKET_DESCRIPTION_SECNONCTP** topic.

Field	Key	Null	FieldType	Description	Example
Bucket	Y	N	String	Bucket number (e.g. 1 - 25)	
RatingCategory	N	N	String	Logical group of ratings	
SectorCategory	N	N	String	Logical group of sectors	
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.	

Equity Bucket Descriptions

This file provides a description of Equity buckets, including canonical values for Sector. It is used to populate the market cap, economy, and sector fields of the equity(underlying) description during the ETL.

When the SBM sensitivity files (*Curvature*, *Delta*, or *Vega*) omit the market cap, economy, and/or sector fields, they can be filled from this Equity Bucket Descriptions file. To take advantage of this, the bucket description file must be loaded before (or at the same time as) the Curvature, Delta, or Vega file.

This Equity Bucket Descriptions file type is identified using the pattern: ****/Equity_Bucket_Description*.csv** (as specified by equity.bucket-description.file-pattern). This file is loaded using the **EQUITY_BUCKET_DESCRIPTION** topic.

Field	Key	Null	FieldType	Description	Example
Bucket	Y	N	String	Bucket number (e.g. 1 - 13)	
Market Cap Category	N	N	String	Market Cap for the bucket	Large, Small, Other
Economy Category	N	N	String	Economy for the Bucket	Advanced, Emerging, Other
Sector Category	N	N	String	Sector for the Bucket	
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.	

Equity Buckets

This file provides a mapping from Market Cap, Issuer Economy, and Issuer Sector to Equity Bucket.

When the SBM sensitivity files (*Curvature*, *Delta*, or *Vega*) omit the Bucket field, it is filled in from this Equity Buckets file. To take advantage of this, the buckets file must be loaded before (or at the same time as) the Curvature, Delta, or Vega file.

This Equity Buckets file type is identified using the pattern: ****/Equity_Buckets*.csv** (as specified by equity.buckets.file-pattern). This file is loaded using the **EquityBuckets** topic.

Field	Key	Null	FieldType	Description	Example
MarketCap	Y	N	String	Value must be “Large”,“Small"or “Other” and must match sensitivities file	
IssuerEconomy	Y	N	String	Value must be “Emerging economy”,“Advanced economy”, or “Other” and must match sensitivities file	
IssuerSector	Y	N	String	Must match “EquitySector” of sensitivities file	
Bucket	N	N	String	Bucket number (e.g. 1 - 13)	
AsOfDate	Y	N	Date ‘YYYY-MM-DD’	Timestamp (at close of business) for the data.	

DRC Files

- *DRC Buckets*
- *SA DRC Summary*
- *SA DRC Trade*

DRC Buckets

This file provides a mapping from Region and Asset Class to DRC Sec non-CTP Bucket.

When the *sa-drc-trade* files omit the Bucket field for DRC Sec non-CTP, it is filled from this DRC Buckets file. To take advantage of this, the buckets file must be loaded before (or at the same time as) the DRC trade-

level file.

This DRC Buckets file type is identified using the pattern: ****/DRC_Bucket_SECNONCTP*.csv** (as specified by drc.bucket.sec-non-ctp.file-pattern). This file is loaded using the **DrcSecNonCtpBuckets** topic.

Field	Key	Null	FieldType	Description	Example
Bucket	N	N	String	The DRC Bucket	
Region	Y	N	String	Region for Bucket (BCBS 457, MAR22.31 (2)(b)). Values must match DRC trades file.	
AssetClass	Y	N	String	Asset class for Bucket (BCBS 457, MAR22.31 (2)(b)). Values must match DRC trades file.	
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.	

SA DRC Summary

This file defines fields for Jump to Default Risk for non-Sec and Sec non-CTP, including instrument description. Fields are applicable to all components except where indicated.

This SA DRC Summary file type is identified using the pattern: ****/DRC_Summary_*.csv** (as specified by drc.summary.file-pattern). This file is loaded using the **DRC_Summary** topic.

Field	Key	Null	FieldType	Description	Example
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.	2018-06-29
Book	Y	N	String	The book Id	
LegalEntity	Y	N	String	The legal entity Id	
RiskClass	Y	N	String	"DRC non-Sec" or "DRC Sec non-CTP"	DRC Sec CTP

RiskFactor	Y	Y	String	An identifier for the combination of the obligor/tranche (underlying), seniority (DRC non-Sec), and maturity. If omitted, it will be generated in the ETL.	
ObligorCategory	N	N	String	Applicable to DRC non-Sec only Obligor Category/Bucket (BCBS 457, MAR22.22). Any values allowed	Corporates
Instrument LGD Type	Y	N	String	Applicable to DRC non-Sec only Instrument type for LGD (BCBS 457, MAR22.12). “equity”, “junior debt”, “senior debt”, or “covered bond”)	senior debt
Seniority	N	N	String	Seniority of the exposure. For DRC non-Sec, this matches values in seniority description file. For DRC Sec non-CTP, this is “senior” or not for calculating the SEC-ERBA risk-weights.	Senior
Direction	Y	N	String	‘long’ or ‘short’	Long
Maturity	N	Y	String	Maturity of the trade	“1D”, “2W”, “12M”, “1Y”, or date “YYYY-MM-DD”
Rating	N	N	String	Credit Quality Category: For non-Sec, see BCBS 457, [MAR22.24]. For Sec non-CTP, see BCBS 374, paras 66-68.	BBB
Notional	N	Y	Double	(Optional) This is used to compute GrossJTD for non-Sec when not provided. This is an optional override for the ‘Notional’ in the Trade Attributes file. *Note*: the use of Notional in the Trade Attributes for DRC is deprecated.	

MarketValue	N	Y	Double	Applicable to DRC non-Sec only (Optional) This is used to compute GrossJTD for Sec non-CTP when not provided. This is an optional override for the 'PresentValue' in the Trade Attributes file. *Note*: the use of PresentValue in the Trade Attributes for DRC is deprecated.	
GrossJTD	N	Y	String	(Optional) Gross JTD value; providing this value skips the calculation (using market value and notional)	
Ccy	N	Y	String	Currency code of Gross JTD, Notional, or MarketValue. Required if GrossJTD, Notional or MarketValue provided.	USD
Underlying	N	N	String	The id of the obligor or tranche.	CDX.NA.HY Series 37 10%-15%
Region	N	Y	String	Applicable to DRC Sec non-CTP only Region for Bucket (BCBS 457, MAR22.31(2)(b)). Values must match DRC Buckets file.	
AssetClass	N	Y	String	Applicable to DRC Sec non-CTP only Asset class for Bucket (BCBS 457, MAR22.31(2)(b)). Values must match DRC Buckets file.	
Attachment	N	Y	Double	DRC Sec non-CTP Attachment, DRC Sec CTP Attachment. The start of the tranche or empty Attachment point (Decimal values are expected).	0.10

Detachment	N	Y	Double	DRC Sec non-CTP Detachment, DRC Sec CTP Detachment. The end of the tranche or empty Detachment point (Decimal values are expected).	0.15
RecoveryRates	N	Y	Double	Applicable to IMA only Not used for SA.	
RecoveryValues	N	Y	Double	Applicable to IMA only Not used for SA.	
Rating type	N	Y	String	The rating type used when looking up SEC-ERBA risk-weights (and when applying flooring logic).	STC
Risk Weight	N	Y	Double	Override the risk-weight by obligor (DRC non-Sec) or tranche (DRC Sec non-CTP)	SEC-SA risk-weight for DRC Sec non-CTP
Adjustment	N	Y	Double	Adjustment to make when calculating GrossJTD. This adjustment is only applied if sa.drc.adjustment.apply=true, by default this is set to false and this field is not used. The currency the adjustment is expressed in is given by the existing Gross JTD currency field.	
Bucket	N	N	String	The bucket used for the DRC computation, mandatory for *DRC Sec CTP* (BCBS 457,MAR22.40)	CDX.NA.HY
Zero Risk-Weight	N	Y	Y/N flag	Flag indicating if the exposure (RiskFactor) qualifies for a zero risk-weight Default = N	

DRC Fund Treatment	N	Y	HY & Distressed/blank	Flag indicating if the obligor cannot be included in offsetting or diversification with other exposures.	
Instrument Type	Y	Y	String	Reported Instrument Type ('Derivative' or 'Non-Derivative').	Derivative, Non-Derivative

This file is also used in the IMA, see *drc-trade-level-ima*

> NOTE
>
> The Solution uses this input file alongside the *SBM Sensitivity files* to load sensitivity information. The native formats offer enhanced support and features such as multiple jurisdictions, and better reporting. However, you can use *CRIF* (Common Risk Interchange Format) as an alternative to the native sensitivity input files. CRIF input files should be created according to the standard ISDA CRIF. For details on how to become a licensed CRIF user, contact ISDA at analytics@isda.org.

SA DRC Trade

This file defines fields for Jump to Default Risk for non-Sec and Sec non-CTP, including instrument description. Fields are applicable to all components except where indicated.

This SA DRC Trade file type is identified using the pattern: ****/DRC_Trade_*.csv** (as specified by drc.trade.file-pattern). This file is loaded using the **DRC** topic.

Field	Key	Null	FieldType	Description	Example
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.	2018-06-29
TradeId	Y	N	String	If coming from multiple systems may need to prepend source system to the id for uniqueness	"IR_IRSWAP_LIBOR3M", "EQ_12345677", etc.
RiskClass	Y	N	String	"DRC non-Sec" or "DRC Sec non-CTP"	DRC Sec CTP

RiskFactor	Y	Y	String	An identifier for the combination of the obligor/tranche (underlying), seniority (DRC non-Sec), and maturity. If omitted, it will be generated in the ETL.	
ObligorCategory	N	N	String	Applicable to DRC non-Sec only Obligor Category/Bucket (BCBS 457, MAR22.22). Any values allowed	Corporates
Instrument LGD Type	N	N	String	Applicable to DRC non-Sec only Instrument type for LGD (BCBS 457, MAR22.12). “equity”, “junior debt”, “senior debt”, or “covered bond”)	senior debt
Seniority	N	N	String	Seniority of the exposure. For DRC non-Sec, this matches values in seniority description file. For DRC Sec non-CTP, this is “senior” or not for calculating the SEC-ERBA risk-weights.	Senior
Direction	N	N	String	‘long’ or ‘short’	Long
Maturity	N	Y	String	Maturity of the trade	“1D”, “2W”, “12M”, “1Y”, or date “YYYY-MM-DD”
Rating	N	N	String	Credit Quality Category: For non-Sec, see BCBS 457, [MAR22.24]. For Sec non-CTP, see BCBS 374, paras 66-68.	BBB
Notional	N	Y	Double	(Optional) This is used to compute GrossJTD for non-Sec when not provided. This is an optional override for the ‘Notional’ in the Trade Attributes file. *Note*: the use of Notional in the Trade Attributes for DRC is deprecated.	

MarketValue	N	Y	Double	Applicable to DRC non-Sec only (Optional) This is used to compute GrossJTD for Sec non-CTP when not provided. This is an optional override for the 'PresentValue' in the Trade Attributes file. *Note*: the use of PresentValue in the Trade Attributes for DRC is deprecated.	
GrossJTD	N	Y	String	(Optional) Gross JTD value; providing this value skips the calculation (using market value and notional)	
Ccy	N	Y	String	Currency code of Gross JTD, Notional, or MarketValue. Required if GrossJTD, Notional or MarketValue provided.	USD
Underlying	N	N	String	The id of the obligor or tranche.	CDX.NA.HY Series 37 10%-15%
Region	N	Y	String	Applicable to DRC Sec non-CTP only Region for Bucket (BCBS 457, MAR22.31(2)(b)). Values must match DRC Buckets file.	
AssetClass	N	Y	String	Applicable to DRC Sec non-CTP only Asset class for Bucket (BCBS 457, MAR22.31(2)(b)). Values must match DRC Buckets file.	
Attachment	N	Y	Double	DRC Sec non-CTP Attachment, DRC Sec CTP Attachment. The start of the tranche or empty Attachment point (Decimal values are expected).	0.10

Detachment	N	Y	Double	DRC Sec non-CTP Detachment, DRC Sec CTP Detachment. The end of the tranche or empty Detachment point (Decimal values are expected).	0.15
RecoveryRates	N	Y	Double	Applicable to IMA only Not used for SA.	
RecoveryValues	N	Y	Double	Applicable to IMA only Not used for SA.	
Rating type	N	Y	String	The rating type used when looking up SEC-ERBA risk-weights (and when applying flooring logic).	STC
Risk Weight	N	Y	Double	Override the risk-weight by obligor (DRC non-Sec) or tranche (DRC Sec non-CTP)	SEC-SA risk-weight for DRC Sec non-CTP
Adjustment	N	Y	Double	Adjustment to make when calculating GrossJTD. This adjustment is only applied if sa.drc.adjustment.apply=true, by default this is set to false and this field is not used. The currency the adjustment is expressed in is given by the existing Gross JTD currency field.	
Bucket	N	N	String	The bucket used for the DRC computation, mandatory for *DRC Sec CTP* (BCBS 457,MAR22.40)	CDX.NA.HY
Zero Risk-Weight	N	Y	Y/N flag	Flag indicating if the exposure (RiskFactor) qualifies for a zero risk-weight Default = N	

DRC Fund Treatment	N	Y	HY & Distressed/blank	Flag indicating if the obligor cannot be included in offsetting or diversification with other exposures.	
Instrument Type	N	Y	String	Reported Instrument Type ('Derivative' or 'Non-Derivative').	Derivative, Non-Derivative

This file is also used in the IMA, see *drc-trade-level-ima*

> NOTE
>
> The Solution uses this input file alongside the *SBM Sensitivity files* to load sensitivity information. The native formats offer enhanced support and features such as multiple jurisdictions, and better reporting. However, you can use *CRIF* (Common Risk Interchange Format) as an alternative to the native sensitivity input files. CRIF input files should be created according to the standard ISDA CRIF. For details on how to become a licensed CRIF user, contact ISDA at analytics@isda.org.

Overrides

Overrides allow for changing static data for different Parameter Sets.

For example, CRR2 adds additional Buckets over BCBS, so we use overrides to move Risk Factors from one Bucket to another for the CRR2 Parameter Set.

- *Legal Entity Imports*
- *Obligor Overrides*
- *Risk-Factor Description Overrides*
- *RRAO Overrides*
- *Tranche Overrides*
- *Underlying Description Overrides*

Legal Entity Imports

Deprecated: This file is used to import pre-calculated Capital Charge values at the legal entity level, for use in reporting.

This Legal Entity Imports file type is identified using the pattern: ****/LegalEntityImports*.csv** (as specified by legal-entity.imports.file-pattern). This file is loaded using the **LegalEntityImports** topic.

Field	Key	Null	FieldType	Description	Example
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.	
ParameterSet	Y	N	String	The Parameter Set for which the imported values are calculated	CRR2
CubeMeasure	Y	N	String	The name of the measure whose value is being imported.	"GIRR Delta Risk Charge High"
LegalEntity	Y	N	String	The Legal Entity to assign the imported, pre-calculated values to.	
Value	N	N	Double	The pre-calculated value to import.	
Ccy	N	N	String	The currency that Value is expressed in.	USD

Obligor Overrides

This file provides the overrides for SA DRC non-Sec obligor descriptions.

This Obligor Overrides file type is identified using the pattern: ****/Obligor_Overrides*.csv** (as specified by drc.obligor.overrides.file-pattern). This file is loaded using the **ObligorOverrides** topic.

Field	Key	Null	FieldType	Description	Example
Obligor	Y	N	String	The name of the obligor to override. Matches the "Underlying" column in the *DRC Trade Level* file	
RiskClass	Y	N	String	Set to "DRC non-Sec".	"DRC non-Sec"
Parameter Set	Y	N	String	The parameter set for which the override applies.	CRR2

ObligorCategory	N	Y	String	Obligor Category/Bucket [MAR22.22]. Replaces the Obligor Category in the *DRC Trade Level* file.
Rating	N	Y	String	Credit Quality Category [MAR22.24]. Replaces the Rating in the *DRC Trade Level* file.
Risk Weight	N	Y	Double	Override the risk-weight for this obligor, instead of looking up the risk-weight by rating. Replaces the Risk Weight in the *DRC Trade Level* file.
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.
DRC Fund Treatment	N	Y	HY & Distressed/blank	Flag indicating if the obligor cannot be included in offsetting or diversification with other exposures.

Risk-Factor Description Overrides

This file provides the overrides for SA DRC non-Sec Exposure Descriptions.

This Risk-Factor Description Overrides file type is identified using the pattern: ****/RiskFactor_Desc_Overrides*.csv** (as specified by risk-factor-desc.overrides.file-pattern). This file is loaded using the **RickFactorDescriptionOverrides** topic.

Field	Key	Null	FieldType	Description	Example
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.	
Risk Factor	Y	N	String	The name of the SA DRC non-Sec exposure to override.	
RiskClass	Y	N	String	Defines the risk class for the risk-factor.	"DRC non-Sec"

Risk Measure	Y	N	String	Defines the risk measure for the risk-factor.	“DRC”
Parameter Set	Y	N	String	The parameter set for which the override applies.	CRR2
Risk Factor Type	N	Y	String	Reserved for future use.	
CommodityLocation	N	Y	String	Reserved for future use.	
Seniority	N	Y	String	Reserved for future use.	
Maturity	N	Y	String	Reserved for future use.	
Zero Risk Weight	N	Y	Y/N	Flag indicating if the exposure qualifies for a zero risk-weight.	“Y”, “N”

RRAO Overrides

This file provides the overrides for RRAO category descriptions.

This RRAO Overrides file type is identified using the pattern: ****/RRAO_Overrides*.csv** (as specified by rrao.overrides.file-pattern). This file is loaded using the **RRAOOverrides** topic.

Field	Key	Null	FieldType	Description	Example
RRAOCategory	Y	N	String	The name of the RRAO Category to override. Matches the “RRAOCategory” column in the *Trade Attributes* file	
RiskClass	Y	N	String	Set to “RRAO”.	“RRAO”
Parameter Set	Y	N	String	The parameter set for which the override applies.	CRR2
ResidualRisk	N	Y	‘Y’ or ‘N’	Indicates category subject to residual risk add-on. Replaces the ResidualRisk in the *Trade Attributes* file.	

ExoticUnderlying	N	Y	'Y' or 'N'	If yes and residual risk, risk weight = 1% otherwise if residual risk, weight = .1%. Replaces the ExoticUnderlying in the *Trade Attributes* file.
OtherResidualRiskType	N	Y	String	Replaces the OtherResidualRiskType in the *Trade Attributes* file.
Exemption Reason	N	Y	String	Reported reason why the position is exempt from RRAO.
Asset Class	N	Y	String	Reported asset class.
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.

Tranche Overrides

This file provides the overrides for SA DRC Sec non-CTP tranche descriptions.

This Tranche Overrides file type is identified using the pattern: ****/Tranche_Overrides*.csv** (as specified by drc.tranche.overrides.file-pattern). This file is loaded using the **TrancheOverrides** topic.

Field	Key	Null	FieldType	Description	Example
Tranche	Y	N	String	The name of the tranche to override. Matches the "Underlying" column in the *DRC Trade Level* file	
RiskClass	Y	N	String	Set to "DRC Sec non-CTP".	"DRC Sec non-CTP"
Parameter Set	Y	N	String	The parameter set for which the override applies.	CRR2
Bucket	N	Y	String	Tranche Bucket [MAR22.31].	

Seniority	N	Y	String	Seniority of the exposure. This is “senior” or not for calculating the SEC-ERBA risk-weights. Replaces the Seniority in the *DRC Trade Level* file.	senior
Rating	N	Y	String	The rating used when looking up SEC-ERBA risk-weights. Replaces the Rating in the *DRC Trade Level* file.	
Rating type	N	Y	String	The rating type used when looking up SEC-ERBA risk-weights (and when applying flooring logic). Replaces the Rating Type in the *DRC Trade Level* file.	STC
Region	N	Y	String	Region for Bucket MAR22.31(2)(b). Replaces the Region in the *DRC Trade Level* file.	
AssetClass	N	Y	String	Asset class for Bucket MAR22.31(2)(b). Replaces the AssetClass in the *DRC Trade Level* file.	
Attachment	N	Y	Double	Attachment point (Decimal values are expected). Replaces the Attachment in the *DRC Trade Level* file.	
Detachment	N	Y	Double	Detachment point (Decimal values are expected). Replaces the Detachment in the *DRC Trade Level* file.	
Risk Weight	N	Y	Double	Override the risk-weight for this obligor, instead of looking up the risk-weight by rating. Replaces the Risk Weight in the *DRC Trade Level* file.	

AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.

Underlying Description Overrides

This file provides the overrides for SBM Underlying Descriptions.

This Underlying Description Overrides file type is identified using the pattern: ****/Underlying_Desc_Overrides*.csv** (as specified by underlying-desc.overrides.file-pattern). This file is loaded using the **UnderlyingDescriptionOverrides** topic.

Field	Key	Null	FieldType	Description	Example
Underlying	Y	N	String	The name of the underlying to override. Matches the "Underlying" column in the *Delta*, *Vega*, and *Curvature* files. • CSR non-Sec: Name of credit issuer. • CSR Sec CTP: The name underlying the securitisation. • CSR Sec non-CTP: Name of the asset pool and tranche. • Equity: Name of equity issuer. • Commodity: Name of Commodity.	
RiskClass	Y	N	String	Defines the risk class for the underlying.	"CSR non-Sec", "CSR Sec non-CTP", "CSR Sec CTP", "Equity", "Commodity"
Parameter Set	Y	N	String	The parameter set for which the override applies.	CRR2

Bucket	N	Y	String	Bucket number. Replaces the Bucket in the *Delta*, *Vega*, and *Curvature* files.	
CSRQuality	N	Y	String	CSR only The Issuer or Tranche credit quality. Replaces the CSRQuality in the *Delta*, *Vega*, and *Curvature* files.	IG, HY, NR
CSRSector	N	Y	String	CSR only The issuer or securitisation sector. Replaces the CSRSector in the *Delta*, *Vega*, and *Curvature* files.	For CSR non-Sec and CSR Sec CTP, example values: 'Sovereign', 'Financials', 'Tech' 'Covered Bonds', 'Other' For CSR Sec non-CTP, example values: 'RMBS-Prime', 'RMBS-Mid-Prime', 'RMBS-Sub-Prime', 'CMBS', 'ABS-Auto', 'Other'
CSRRating	N	Y	String	CSR non-Sec only Set to "high" for covered bonds with rating AA- or above; otherwise set to "low" or leave blank. Replaces the CSRRating in the *Delta*, *Vega*, and *Curvature* files.	"high", "low"
EquityMarketCap	N	Y	String	Equity only The equity issuer market cap. Replaces the EquityMarketCap in the *Delta*, *Vega*, and *Curvature* files.	'Large' , 'Small', 'Other'
EquityEconomy	N	Y	String	Equity only The equity issuer economy. Replaces the EquityEconomy in the *Delta*, *Vega*, and *Curvature* files.	'Emerging', 'Advanced', 'Other'

EquitySector	N	Y	String	Equity only The equity sector. Replaces the EquitySector in the *Delta*, *Vega*, and *Curvature* files.	Example values are: “CSG” “Telecommunications-Industrials” “Basic Materials” “Financials” “Other”
Pool	N	Y	String	CSR Sec non-CTP only Pool for tranche. If empty, copied from Underlying.	
Attachment	N	Y	Double	CSR Sec non-CTP only Tranche attachement point. Values between 0.0 and 1.0. If empty, defaults to 0.0.	
Detachment	N	Y	Double	CSR Sec non-CTP only Tranche detachment point. Values between 0.0 and 1.0. If empty, defaults to 0.0.	
AsOfDate	Y	N	Date ‘YYYY-MM-DD’	Timestamp (at close of business) for the data.	

RRAO Files

- *RRAO Summary*
- *RRAO Trade*

RRAO Summary

This file defines fields for summary Residual Risk Add On

This RRAO Summary file type is identified using the pattern: ****/RRAO_Summary*.csv** (as specified by rrao.summary.file-pattern). This file is loaded using the **RRAO_Summary** topic.

Field	Key	Null	FieldType	Description	Example

AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.	2018-06-29
Book	Y	N	String	The book Id.	
LegalEntity	Y	N	String	The legal entity Id.	
ExoticUnderlying	N	Y	'Y' or 'N'	If yes and residual risk, risk weight = 1% otherwise if residual risk, weight = .1%.	
OtherResidualRiskType	N	Y	String	Optional data - valid if ExoticUnderlying = 'N'. Suggested valid values are "GAP", "CORRELATION","BEHAVIORIAL", "OTHER".	
RRAO Category	N	Y	String	This field is used as a key for modifying RRAO attributes. It is used for the overrides as part of the multi-jurisdictional support; it is not used directly in calculations.	
Notional	N	Y	Double	Notional of trade/position.	
NotionalCcy	N	Y	String	Currency of notional. Required whenever notional is provided.	
Residual Risk	N	Y	Y/N	Is this position subject to RRAO. Default = 'Y'	
Exemption Reason	N	Y	String	Reported reason why the position is exempt from RRAO.	
Asset Class	N	Y	String	Reported asset class.	

NOTE

The Solution uses this input file alongside the *SBM Sensitivity files* to load sensitivity information. The native formats offer enhanced support and features such as multiple jurisdictions and better reporting. However, you can use *CRIF* (Common Risk Interchange Format) as an alternative to the native sensitivity input files. CRIF input files should be created according to the standard ISDA CRIF.

For details on how to become a licensed CRIF user, contact ISDA at analytics@isda.org.

RRAO Trade

This file defines fields for Residual Risk Add On

This RRAO Trade file type is identified using the pattern: ****/RRAO_Trade*.csv** (as specified by rrao.trade.file-pattern). This file is loaded using the **RRAO** topic.

Field	Key	Null	FieldType	Description	Example
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.	2018-06-29
TradeId	Y	N	String	If coming from multiple systems may need to prepend source system to the id for uniqueness.	"IR_IRSWAP_LIBOR3M", "EQ_12345677", etc.
ExoticUnderlying	N	Y	'Y' or 'N'	If yes and residual risk, risk weight = 1% otherwise if residual risk, weight = .1%.	
OtherResidualRiskType	N	Y	String	Optional data - valid if ExoticUnderlying = 'N'. Suggested valid values are "GAP", "CORRELATION","BEHAVIORIAL", "OTHER".	
RRAO Category	N	Y	String	This field is used as a key for modifying RRAO attributes. It is used for the overrides as part of the multi-jurisdictional support; it is not used directly in calculations.	
Notional	N	Y	Double	Notional of trade/position.	
NotionalCcy	N	Y	String	Currency of notional. Required whenever notional is provided.	

Residual Risk	N	Y	Y/N	Is this position subject to RRAO. Default = 'Y'.
Exemption Reason	N	Y	String	Reported reason why the position is exempt from RRAO.
Asset Class	N	Y	String	Reported asset class.

NOTE

The Solution uses this input file alongside the *SBM Sensitivity files* to load sensitivity information. The native formats offer enhanced support and features such as multiple jurisdictions and better reporting. However, you can use *CRIF* (Common Risk Interchange Format) as an alternative to the native sensitivity input files. CRIF input files should be created according to the standard ISDA CRIF. For details on how to become a licensed CRIF user, contact ISDA at analytics@isda.org.

SBM Sensitivity-specific Files

Atoti FRTB uses the following SBM Sensitivity input files natively to load sensitivity information, in addition to the *SA DRC Trade Level* input file:

- *Curvature Summary*
- *Delta Summary*
- *Vega Summary*
- *Curvature Trade-level*
- *Delta Trade-level*
- *Vega Trade-level*

The native formats offer enhanced support and features such as multiple jurisdictions, and better reporting. However, you can use *CRIF* (Common Risk Interchange Format) as an alternative to the native sensitivity input files. CRIF input files should be created according to the standard ISDA CRIF.

For details on how to become a licensed CRIF user, contact ISDA at analytics@isda.org.

Curvature Summary

This file defines the Curvature shocked prices, including a description of the risk factor. Full details on each risk factor are explained in the relevant section of the **Atoti FRTB Interpretation and Implementation guide:**

- Commodity
- CSR non-Sec
- CSR Sec CTP
- CSR Sec non-CTP
- Equity
- FX
- GIRR

Field	Key	Null	FieldType	RiskClass	Description	Example
AsOfDate	Y	N	Date 'YYYY-MM-DD'		Timestamp (at close of business) for the data.	
Book	Y	N	String		The book ID.	
LegalEntity	Y	N	String		The legal entity ID.	
RiskClass	Y	N	String		Defines the risk class that the delta data represents. For each risk class the string is the risk class name.	"GIRR", "CSR non-Sec", "CSR Sec non-CTP", "CSR Sec CTP", "Equity", "Commodity", "FX"
RiskFactor	Y	Y	String		Risk factor name. The risk factor name is expected to encompass the definition of the risk factor per the FRTB specification ([MAR21.3] to [MAR21.14]). If not provided, it will be generated from the 'Underlying' column. For details on each risk factor, see the relevant section in the *Atoti FRTB Interpretation and Implementation guide*.	

				GIRR	The currency and equals the bucket.	“USD”, “EUR”
				CSR non-Sec	Name of issuer credit spread curve.	“APPLE”, “GOOGLE”
				CSR Sec CTP	Name of issuer credit spread curve.	
				CSR Sec non-CTP	Name of issuer tranche.	
				Equity	Name of equity issuer.	
				Commodity	Name of Commodity.	“Brent”, “WTI”
				FX	A currency pair (the exchange rate used in the calculation of the sensitivity). If omitted, it is generated from the underlying and FXCounterCurrency.	
Shift_Up_PV	N	N	Double		Valuation resulting from parallel shocks up	
Shift_Down_PV	N	N	Double		Valuation resulting from parallel shocks down	
CurvatureCcy	N	N	String		Currency of PV values	
RiskWeight	N	Y	Double		The risk weight used in the shifted PV values. If field is null, it is assumed to be the value expected in the calculations (at query time).	

PVApplied	N	N	String with set values	Boolean 'Y' or 'N' to indicate if PV has been removed from sensitivities or not. Default value = 'N'	
(unused)	N	Y	String	Field is ignored.	
GIRR Ccy	N	Y	String	GIRR only This is the currency of the curve and equals the bucket.	
Underlying	N	N	String	Represents the primary component of the risk factor. For details on each risk factor, see the relevant section in the *Atoti FRTB Interpretation and Implementation guide*.	
			GIRR	(Can be null) Not used in calculations, but will populate Underlying field in cube.	
			CSR non-Sec	Name of credit issuer.	"APPLE", "GOOGLE"
			CSR Sec CTP	The name underlying the securitisation.	
			CSR Sec non-CTP	Name of the asset pool and tranche.	
			Equity	Name of equity issuer.	
			Commodity	Name of Commodity.	"Brent", "WTI"
			FX	The left-hand side of the risk-factor currency pair.	

CSRQuality	N	Y	String	CSR only The Issuer or Tranche credit quality Values must match corresponding buckets file	IG, HY, NR
CSRSector	N	Y	String	CSR only The issuer or securitisation sector Values must match corresponding buckets file	For CSR non-Sec and CSR Sec CTP, example values: 'Sovereign','Financials','Tech' 'Covered Bonds', 'Other' For CSR Sec non-CTP, example values: 'RMBS-Prime', 'RMBS-Mid-Prime', 'RMBS-Sub-Prime', 'CMBS', 'ABS-Auto', 'Other'
(unused)	N	Y	String	Field is ignored.	
EquityEconomy	N	Y	String	Equity only The equity issuer economy. Values must match the equity buckets file.	'Emerging Market', 'Advanced Economy', 'Other'

EquityMarketCap	N	Y	String	Equity only The equity issuer market cap. Values must match the equity buckets file.	'Large' , 'Small', 'Other'
EquitySector	N	Y	String	Equity only Needed for Vega bucket Value can be anything but must match the buckets file	Example values are "CSG" "Telecommunications-Industrials" "Basic Materials" "Financials" "Other"
CommodityLocation	N	Y	String	Commodity only Commodity delivery location	"Le Havre", "Oklahoma"
(unused)	N	Y	String	Field is ignored.	
(unused)	N	Y	String	Field is ignored.	
(unused)	N	Y	String	Field is ignored.	
FXCounterCurrency	N	Y	String	FX only. The counter currency of the risk-factor currency pair. This should be set to the "reporting currency" or the "base currency" if the base currency approach is being used.	

FXDividerEligibity	Y	Y	String	FX only Y/N flag indicating whether the divider specified in [MAR21.98] can be applied. • Y: The trade does not reference the "reporting currency" (or "base currency" if the base currency approach is being used). • N: The trade references the "reporting currency" (or "base currency" if the base currency approach is being used).	
CSRRating	N	Y	String	CSR non-Sec only The rating used to determine if covered bonds are highly rated or not	"AAA", "high"
Bucket	N	Y	String	Bucket for underlying.	

PresentValue	N	Y	Double	The (unshocked) Present Value of the instrument. This is an optional override for the 'PresentValue' in the Trade Attributes file. *Note*: the use of PresentValue in the Trade Attributes for Curvature is deprecated.
Pool	N	Y	String	CSR Sec non-CTP only Pool for tranche. If empty, copied from Underlying.
Attachment	N	Y	Double	CSR Sec non-CTP only Tranche attachement point. Values between 0.0 and 1.0. If empty, defaults to 0.0.
Detachment	N	Y	Double	CSR Sec non-CTP only Tranche detachment point. Values between 0.0 and 1.0. If empty, defaults to 0.0.
PVLadder	N	Y	String	The cube leaf level (along with the RiskFactor and AsOfDate) to use when interpolating shocked PV ladders. Defaults to being filled with TradeKey.

Normalization

The contents of this file are normalized and loaded into four stores during the ETL. For each row:

- A description of the "underlying" is generated and added to the **UnderlyingDescription** store. This description is shared with Delta and Vega.
- A description of the risk-factor is generated and added to the **RiskFactorDescription** store.
- The sensitivities are added to the **Curvature** store.

Filling missing data

When the bucket field is omitted, it is filled from the Commodity, CSR, and Equities bucket files (as appropriate). To take advantage of this, the bucket files must be loaded before (or at the same time as) the Curvature file.

When the bucket field is provided, some of the fields describing the underlying become optional. For CSR and Equities, these fields can be populated from previously loaded bucket description files.

Risk Class	Optional Fields When Bucket Provided	Bucket File	Bucket Description File
CSR non-Sec	CSRQuality, CSRSector	CSR non-Sec Buckets	*CSR non-Sec Bucket Descriptions*
CSR Sec non-CTP	CSRQuality, CSRSector	CSR Sec non-CTP Buckets	*CSR Sec non-CTP Bucket Descriptions*
CSR Sec CTP	CSRQuality, CSRSector	CSR Sec CTP Buckets	*CSR Sec CTP Bucket Descriptions*
Equity	EquityEconomy, EquityMarketCap, EquitySector	*Equity Buckets*	*Equity Bucket Descriptions*
Commodity		*Commodity Buckets*	

NOTE

The bucket is not sufficient to populate the CSRRating field for CSR non-Sec.

Curvature Trade

This file defines the Curvature shocked prices, including a description of the risk factor. Full details on each risk factor are explained in the relevant section of the **Atoti FRTB Interpretation and Implementation guide:**

- Commodity
- CSR non-Sec
- CSR Sec CTP
- CSR Sec non-CTP
- Equity
- FX
- GIRR

Field	Key	Null	FieldType	RiskClass	Description	Example
AsOfDate	Y	N	Date 'YYYY-MM-DD'		Timestamp (at close of business) for the data.	
TradeId	Y	N	String		If coming from multiple systems may need to prepend source system to the id for uniqueness	"IR_IRSWAP_LIBOR3M", "EQ_12345677", etc.
RiskClass	Y	N	String		Defines the risk class that the delta data represents. For each risk class the string is the risk class name	"GIRR", "CSR non-Sec", "CSR Sec non-CTP", "CSR Sec CTP", "Equity", "Commodity", "FX"

RiskFactor		Y	Y	String		Risk factor name. It is expected that the risk factor name encompasses the definition of the risk factor per the FRTB specification ([MAR21.3] to [MAR21.14]). If not provided, it will be generated from the 'Underlying' column. For details on each risk factor, see the relevant section in the *Atoti FRTB Interpretation and Implementation guide*.
					GIRR	The currency and equals the bucket.	"USD", "EUR"
					CSR non-Sec	Name of issuer credit spread curve.	"APPLE", "GOOGLE"
					CSR Sec CTP	Name of issuer credit spread curve.	
					CSR Sec non-CTP	Name of issuer tranche.	
					Equity	Name of equity issuer.	
					Commodity	Name of Commodity.	"Brent", "WTI"
					FX	A currency pair (the exchange rate used in the calculation of the sensitivity). If omitted, it is generated from the underlying and FXCounterCurrency.	

Shift_Up_PV	N	N	Double		Valuation resulting from parallel shocks up	
Shift_Down_PV	N	N	Double		Valuation resulting from parallel shocks down	
CurvatureCcy	N	N	String		Currency of PV values	
RiskWeight	N	Y	Double		The risk weight used in the shifted PV values. If field is null, it is assumed to be the value expected in the calculations (at query time).	
PVApplied	N	N	String with set values		Boolean 'Y' or 'N' to indicate if PV has been removed from sensitivities or not. Default value = 'N'	
(unused)	N	Y	String		Field is ignored.	
GIRR Ccy	N	Y	String		GIRR only This is the currency of the curve and equals the bucket.	
Underlying	N	N	String		Represents the primary component of the risk factor. For details on each risk factor, see the relevant section in the *Atoti FRTB Interpretation and Implementation guide*.	
				GIRR	(Can be null) Not used in calculations, but will populate Underlying field in cube.	
				CSR non-Sec	Name of credit issuer.	"APPLE", "GOOGLE"

				CSR Sec CTP	The name underlying the securitisation.	
				CSR Sec non-CTP	Name of the asset pool and tranche.	
				Equity	Name of equity issuer.	
				Commodity	Name of Commodity.	“Brent”, “WTI”
				FX	The left-hand side of the risk-factor currency pair.	
CSRQuality	N	Y	String		CSR only The Issuer or Tranche credit quality Values must match corresponding buckets file	IG, HY, NR

CSRSector	N	Y	String	CSR only The issuer or securitisation sector Values must match corresponding buckets file	For CSR non-Sec and CSR Sec CTP, example values: 'Sovereign',' Financials',' Tech' 'Covered Bonds', 'Other' For CSR Sec non-CTP, example values: 'RMBS-Prime', 'RMBS-Mid-Prime', 'RMBS-Sub-Prime', 'CMBS', 'ABS-Auto', 'Other'
(unused)	N	Y	String	Field is ignored.	
EquityEconomy	N	Y	String	Equity only The equity issuer economy. Values must match the equity buckets file.	'Emerging Market', 'Advanced Economy', 'Other'
EquityMarketCap	N	Y	String	Equity only The equity issuer market cap. Values must match the equity buckets file.	'Large' , 'Small', 'Other'

EquitySector	N	Y	String	Equity only Needed for Vega bucket Value can be anything but must match the buckets file	Example values are “CSG” “Telecommunications-Industrials” “Basic Materials” “Financials” “Other”
CommodityLocation	N	Y	String	Commodity only Commodity delivery location	“Le Havre”, “Oklahoma”
(unused)	N	Y	String	Field is ignored.	
(unused)	N	Y	String	Field is ignored.	
(unused)	N	Y	String	Field is ignored.	
FXCounterCurrency	N	Y	String	FX only. The counter currency of the risk-factor currency pair. This should be set to the “reporting currency” or the “base currency” if the base currency approach is being used.	

FXDividerEligibity	N	Y	String	FX only Y/N flag indicating whether the divider specified in [MAR21.98] can be applied. • Y: The trade does not reference the "reporting currency" (or "base currency" if the base currency approach is being used). • N: The trade references the "reporting currency" (or "base currency" if the base currency approach is being used).	
CSRRating	N	Y	String	CSR non-Sec only The rating used to determine if covered bonds are highly rated or not	"AAA", "high"
Bucket	N	Y	String	Bucket for underlying.	

PresentValue	N	Y	Double	The (unshocked) Present Value of the instrument. This is an optional override for the 'PresentValue' in the Trade Attributes file. *Note*: the use of PresentValue in the Trade Attributes for Curvature is deprecated.
Pool	N	Y	String	CSR Sec non-CTP only Pool for tranche. If empty, copied from Underlying.
Attachment	N	Y	Double	CSR Sec non-CTP only Tranche attachement point. Values between 0.0 and 1.0. If empty, defaults to 0.0.
Detachment	N	Y	Double	CSR Sec non-CTP only Tranche detachment point. Values between 0.0 and 1.0. If empty, defaults to 0.0.
PVLadder	N	Y	String	The cube leaf level (along with the RiskFactor and AsOfDate) to use when interpolating shocked PV ladders. Defaults to being filled with TradeKey.

Normalization

The contents of this file are normalized and loaded into four stores during the ETL. For each row:

- A description of the "underlying" is generated and added to the **UnderlyingDescription** store. This description is shared with Delta and Vega.
- A description of the risk-factor is generated and added to the **RiskFactorDescription** store.
- The sensitivities are added to the **Curvature** store.

Filling missing data

When the bucket field is omitted, it is filled from the Commodity, CSR, and Equities bucket files (as appropriate). To take advantage of this, the bucket files must be loaded before (or at the same time as) the Curvature file.

When the bucket field is provided, some of the fields describing the underlying become optional. For CSR and Equities, these fields can be populated from previously loaded bucket description files.

Risk Class	Optional Fields When Bucket Provided	Bucket File	Bucket Description File
CSR non-Sec	CSRQuality, CSRSector	CSR non-Sec Buckets	*CSR non-Sec Bucket Descriptions*
CSR Sec non-CTP	CSRQuality, CSRSector	CSR Sec non-CTP Buckets	*CSR Sec non-CTP Bucket Descriptions*
CSR Sec CTP	CSRQuality, CSRSector	CSR Sec CTP Buckets	*CSR Sec CTP Bucket Descriptions*
Equity	EquityEconomy, EquityMarketCap, EquitySector	*Equity Buckets*	*Equity Bucket Descriptions*
Commodity		*Commodity Buckets*	

> NOTE
>
> The bucket is not sufficient to populate the CSRRating field for CSR non-Sec.

Delta Summary

This file defines the Delta sensitivities, including a description of the risk factor. Full details on each risk factor are explained in the relevant section of the **Atoti FRTB Interpretation and Implementation guide:**

- Commodity

- CSR non-Sec
- CSR Sec CTP
- CSR Sec non-CTP
- Equity
- FX
- GIRR

Field	Key	Null	FieldType	RiskClass	Description	Example
AsOfDate	Y	N	Date 'YYYY-MM-DD'		Timestamp (at close of business) for the data.	
Book	Y	N	String		The book ID.	
LegalEntity	Y	N	String		The legal entity ID.	
DeltaCcy	N	N	String		Currency of the Delta sensitivities provided.	
DeltaSensitivities	N	N	Double Array or Double, separated by semicolons		Single value or vector of delta sensitivities.	
				GIRR	Vector	
				Commodity	Vector	
				CSR non-Sec	Vector	
				CSR Sec CTP	Vector	
				CSR Sec non-CTP	Vector	
				Equity	Single value	
				FX	Single value	

RiskClass	Y	N	String	Defines the risk class that the delta data represents. For each risk class, the string is the risk class name	“GIRR”, “CSR non-Sec”, “CSR Sec non-CTP”, “CSR Sec CTP”, “Equity”, “Commodity”, “FX”
SensitivityDates	N	Y	String Array or String with set format, separated by semicolons	GIRR, CSR, and Commodities only Vector of dates that correspond to the Delta sensitivities. If dates are not provided, Delta Sensitivities are assumed to map to prescribed vertices. The following do not use dates: FX and Equity sensitivites, GIRR cross-currency basis and inflation curves.	GIRR and Commodity: “0.25;0.5;1;2;3;5;10;15;20” CSR: “0.5;1;3;5;10”

RiskFactor	Y	Y	String		Risk factor name. The risk factor name is expected to encompass the definition of the risk factor per the FRTB specification ([MAR21.3] to [MAR21.14]), up to the sensitivity dates; this name is shared by all sensitivity dates. If not provided, it will be generated from the 'Underlying' column. For details on each risk factor, see the relevant section in the *Atoti FRTB Interpretation and Implementation guide*.	
				GIRR	Name of underlying curve (e.g. UsdLibor3m). If not provided, then it is copied from Underlying.	
				CSR non-Sec	Name of issuer credit spread curve plus basis (Bond or CDS). If not provided, then it is calculated as (Underlying + Type).	"APPLE BOND", "GOOGLE CDS"
				CSR Sec CTP	Name of issuer credit spread curve plus basis (Bond or CDS). If not provided, then it is calculated as (Underlying + Type).	

				CSR Sec non-CTP	Name of issuer tranche, credit spread curve. If not provided, then it is calculated as (Underlying + Type).	
				Equity	Name of equity plus type (spot or repo). If not provided, then it is calculated as (Underlying + Type).	"IBM SPOT"
				Commodity	Unique commodity name should include commodity name and delivery location. If not provided, it is calculated as (Underlying + Location).	"Brent Le Havre", "WTI Oklahoma"
				FX	A currency pair (the exchange rate used in the calculation of the sensitivity). If omitted, it is generated from the underlying and FXCounterCurrency.	
Type		N	Y	String	Type of underlying risk factor or GIRR curve. Needed for some risk classes. For details on each risk factor, see the relevant section in the *Atoti FRTB Interpretation and Implementation guide*.	
				GIRR	Defines type of underlying curve.	"Yield", "Basis", "Inflation"

				CSR non-Sec	Defines basis of CSR.	"BOND", "CDS"
				CSR Sec CTP	Defines basis of CSR.	
				CSR Sec non-CTP	Defines basis of CSR Equity.	
				Equity	Equity type.	"Spot" or "Repo"
GIRR Ccy	N	Y	String		GIRR only This is the currency of the curve and equals the bucket.	
Underlying	N	N	String		Represents the primary component of the risk factor. For details on each risk factor, see the relevant section in the *Atoti FRTB Interpretation and Implementation guide*.	
				GIRR	Name of curve.	
				CSR non-Sec	Name of credit issuer.	"APPLE", "GOOGLE"
				CSR Sec CTP	The name underlying the securitisation.	
				CSR Sec non-CTP	Name of the asset pool and tranche.	
				Equity	Name of equity issuer.	
				Commodity	Name of Commodity.	"Brent", "WTI"
				FX	The left-hand side of the risk-factor currency pair.	

CSRQuality	N	Y	String	CSR only The Issuer or Tranche credit quality Values must match corresponding buckets file	IG, HY, NR
CSRSector	N	Y	String	CSR only The issuer or securitisation sector Values must match corresponding buckets file	For CSR non-Sec and CSR Sec CTP, example values: 'Sovereign', 'Financials', 'Tech' 'Covered Bonds', 'Other' For CSR Sec non-CTP, example values: 'RMBS-Prime', 'RMBS-Mid-Prime', 'RMBS-Sub-Prime', 'CMBS', 'ABS-Auto', 'Other'
(unused)	N	Y	String	Field is ignored.	
EquityEconomy	N	Y	String	Equity only The equity issuer economy. Values must match the equity buckets file.	'Emerging Market', 'Advanced Economy', 'Other'

EquityMarketCap	N	Y	String	Equity only The equity issuer market cap. Values must match the equity buckets file.	'Large' , 'Small', 'Other'
EquitySector	N	Y	String	Equity only Needed for Vega bucket Value can be anything but must match the buckets file	Example values are: "CSG" "Telecommunications - Industrials" "Basic Materials" "Financials" "Other"
CommodityLocation	N	Y	String	Commodity only Commodity delivery location	"Le Havre", "Oklahoma"
(unused)	N	Y	String	Field is ignored.	
(unused)	N	Y	String	Field is ignored.	
(unused)	N	Y	String	Field is ignored.	
FXCounterCurrency	N	Y	String	FX only. The counter currency of the risk-factor currency pair. This should be set to the "reporting currency" or the "base currency" if the base currency approach is being used.	

Optionality	Y	Y	'Y' or 'N'	(Optional) Indicates whether the instrument has optionality (See BCBS 457 [MAR21.2]). • 'Y' for instruments with optionality (and hence with Vega and Curvature risk) • 'N' for trades without optionality (with no Vega and Curvature risk).	
CSRRating	N	Y	String	CSR non-Sec only The rating used to determine if covered bonds are highly rated or not	"AAA", "high"
FxComplexDelta	Y	Y	String	FX only Set to "N" to enable automatic translations of the sensitivities for different reporting currencies. Otherwise set to "Y" or leave blank to turn off such translations.	
FxOtherCcy	Y	Y	String	FX only If the sensitivity to a currency pair has been split prior to entering the ActiveViam FRTB solution, this field can be used to add the other half of the pair.	

FXDividerEligibility	Y	Y	String	FX only Y/N flag indicating whether the divider specified in [MAR21.98] can be applied. • Y: The trade does not reference the "reporting currency" (or "base currency" if the base currency approach is being used). • N: The trade references the "reporting currency" (or "base currency" if the base currency approach is being used).
Bucket	N	Y	String	Bucket for underlying.
Pool	N	Y	String	CSR Sec non-CTP only Pool for tranche. If empty, copied from Underlying.
Attachment	N	Y	Double	CSR Sec non-CTP only Tranche attachement point. Values between 0.0 and 1.0. If empty, defaults to 0.0.

Detachment	N	Y	Double	CSR Sec non-CTP only Tranche detachment point. Values between 0.0 and 1.0. If empty, defaults to 0.0.	
GIRR Basis Ccy	N	Y	String	GIRR only The counter currency for GIRR cross-currency basis curves.	EUR, USD

Normalization

The contents of this file are normalized and loaded into four stores during the ETL. For each row:

- A description of the "underlying" is generated and added to the **UnderlyingDescription** store. This description is shared with Vega and Curvature.
- A description of the risk-factor is generated and added to the **RiskFactorDescription** store.
- The sensitivities are added to the **Delta** store.

Filling missing data

When the bucket field is omitted, it is filled from the Commodity, CSR, and Equities bucket files (as appropriate). To take advantage of this, the bucket files must be loaded before (or at the same time as) the Delta file.

When the bucket field is provided, some of the fields describing the underlying become optional. For CSR and Equities, these fields can be populated from previously loaded bucket description files.

Risk Class	Optional Fields When Bucket Provided	Bucket File	Bucket Description File
CSR non-Sec	CSRQuality, CSRSector	CSR non-Sec Buckets	*CSR non-Sec Bucket Descriptions*
CSR Sec non-CTP	CSRQuality, CSRSector	CSR Sec non-CTP Buckets	*CSR Sec non-CTP Bucket Descriptions*
CSR Sec CTP	CSRQuality, CSRSector	CSR Sec CTP Buckets	*CSR Sec CTP Bucket Descriptions*
Equity	EquityEconomy, EquityMarketCap, EquitySector	*Equity Buckets*	*Equity Bucket Descriptions*

Risk Class	Optional Fields When Bucket Provided	Bucket File	Bucket Description File
Commodity		*Commodity Buckets*	

> NOTE
>
> The bucket is not sufficient to populate the CSRRating field for CSR non-Sec.

Delta Trade

This file defines the Delta sensitivities, including a description of the risk factor. Full details on each risk factor are explained in the relevant section of the **Atoti FRTB Interpretation and Implementation guide:**

- Commodity
- CSR non-Sec
- CSR Sec CTP
- CSR Sec non-CTP
- Equity
- FX
- GIRR

Field	Key	Null	FieldType	RiskClass	Description	Example
AsOfDate	Y	N	Date 'YYYY-MM-DD'		Timestamp (at close of business) for the data.	
TradeId	Y	N	String		If coming from multiple systems may need to prepend source system to the id for uniqueness	"IR_IRSWAP_LIBOR3M", "EQ_12345677", etc.
DeltaCcy	N	N	String		Currency of the Delta sensitivities provided	

DeltaSensitivities	N	N	Double Array or Double, separated by semicolons		Single value or vector of delta sensitivities.
				GIRR	Vector
				Commodity	Vector
				CSR non-Sec	Vector
				CSR Sec CTP	Vector
				CSR Sec non-CTP	Vector
				Equity	Single value
				FX	Single value
RiskClass	Y	N	String		Defines the risk class that the delta data represents. For each risk class the string is the risk class name	“GIRR”, “CSR non-Sec”, “CSR Sec non-CTP”, “CSR Sec CTP”, “Equity”, “Commodity”, “FX”

SensitivityDates	N	Y	String Array or String with set format, separated by semicolons	GIRR, CSR, and Commodities only Vector of dates that correspond to the Delta sensitivities. If dates are not provided, Delta Sensitivities are assumed to map to prescribed vertices. The following do not use dates: FX and Equity sensitivites; GIRR cross-currency basis and inflation curves.	GIRR and Commodity: “0.25;0.5;1;2;3;5;10;15;20” CSR: “0.5;1;3;5;10”
RiskFactor	Y	Y	String	Risk factor name. It is expected that the risk factor name encompasses the definition of the risk factor per the FRTB specification ([MAR21.3] to [MAR21.14]), up to the sensitivity dates; this name is shared by all sensitivity dates. If not provided, it will be generated from the ‘Underlying’ column. For details on each risk factor, see the relevant section in the *Atoti FRTB Interpretation and Implementation guide*.	
				GIRR Name of underlying curve (e.g. UsdLibor3m). If not provided, then it is copied from Underlying.	

	CSR non-Sec	Name of issuer credit spread curve plus basis (Bond or CDS). If not provided, then it is calculated as (Underlying + Type).	"APPLE BOND", "GOOGLE CDS"
	CSR Sec CTP	Name of issuer credit spread curve plus basis (Bond or CDS). If not provided, then it is calculated as (Underlying + Type).	
	CSR Sec non-CTP	Name of issuer tranche, credit spread curve. If not provided, then it is calculated as (Underlying + Type).	
	Equity	Name of equity plus type (spot or repo). If not provided, then it is calculated as (Underlying + Type).	"IBM SPOT"
	Commodity	Unique commodity name should include commodity name and delivery location. If not provided, then it is calculated as (Underlying + Location).	"Brent Le Havre", "WTI Oklahoma"

				FX	A currency pair (the exchange rate used in the calculation of the sensitivity). If omitted, it is generated from the underlying and FXCounterCurrency.	
Type	N	Y	String		Type of underlying risk factor or GIRR curve. Needed for some risk classes. For details on each risk factor, see the relevant section in the *Atoti FRTB Interpretation and Implementation guide*.	
				GIRR	Defines type of underlying curve.	"Yield", "Basis", "Inflation"
				CSR non-Sec	Defines basis of CSR.	"BOND", "CDS"
				CSR Sec CTP	Defines basis of CSR.	
				CSR Sec non-CTP	Defines basis of CSR Equity.	
				Equity	Equity type.	"Spot" or "Repo"
GIRR Ccy	N	Y	String		GIRR only This is the currency of the curve and equals the bucket.	

Underlying	N	N	String		Represents the primary component of the risk factor. For details on each risk factor, see the relevant section in the *Atoti FRTB Interpretation and Implementation guide*.	
				GIRR	Name of curve.	
				CSR non-Sec	Name of credit issuer.	“APPLE”, “GOOGLE”
				CSR Sec CTP	The name underlying the securitisation.	
				CSR Sec non-CTP	Name of the asset pool and tranche.	
				Equity	Name of equity issuer.	
				Commodity	Name of Commodity.	“Brent”, “WTI”
				FX	The left-hand side of the risk-factor currency pair.	
CSRQuality	N	Y	String		CSR only The Issuer or Tranche credit quality Values must match corresponding buckets file	IG, HY, NR

CSRSector	N	Y	String	CSR only The issuer or securitisation sector Values must match corresponding buckets file	For CSR non-Sec and CSR Sec CTP, example values: 'Sovereign', 'Financials', 'Tech' 'Covered Bonds', 'Other' For CSR Sec non-CTP, example values: 'RMBS-Prime', 'RMBS-Mid-Prime', 'RMBS-Sub-Prime', 'CMBS', 'ABS-Auto', 'Other'
(unused)	N	Y	String	Field is ignored.	
EquityEconomy	N	Y	String	Equity only The equity issuer economy. Values must match the equity buckets file.	'Emerging Market', 'Advanced Economy', 'Other'
EquityMarketCap	N	Y	String	Equity only The equity issuer market cap. Values must match the equity buckets file.	'Large' , 'Small', 'Other'

EquitySector	N	Y	String	Equity only Needed for Vega bucket Value can be anything but must match the buckets file	Example values are: “CSG” “Telecommunications - Industrials” “Basic Materials” “Financials” “Other”
CommodityLocation	N	Y	String	Commodity only Commodity delivery location	“Le Havre”, “Oklahoma”
(unused)	N	Y	String	Field is ignored.	
(unused)	N	Y	String	Field is ignored.	
(unused)	N	Y	String	Field is ignored.	
FXCounterCurrency	N	Y	String	FX only. The counter currency of the risk-factor currency pair. This should be set to the “reporting currency” or the “base currency” if the base currency approach is being used.	

Optionality	N	Y	'Y' or 'N'	(Optional) Indicates whether the instrument has optionality (See BCBS 457 [MAR21.2]). • 'Y' for instruments with optionality (and hence with Vega and Curvature risk) • 'N' for trades without optionality (with no Vega and Curvature risk).	
CSRRating	N	Y	String	CSR non-Sec only The rating used to determine if covered bonds are highly rated or not	"AAA", "high"
FxComplexDelta	N	Y	String	FX only Set to "N" to enable automatic translations of the sensitivities for different reporting currencies. Otherwise set to "Y" or leave blank to turn off such translations.	
FxOtherCcy	N	Y	String	FX only If the sensitivity to a currency pair has been split prior to entering the ActiveViam FRTB solution, this field can be used to add the other half of the pair.	

FXDividerEligibility	N	Y	String	FX only Y/N flag indicating whether the divider specified in [MAR21.98] can be applied. • Y: The trade does not reference the "reporting currency" (or "base currency" if the base currency approach is being used). • N: The trade references the "reporting currency" (or "base currency" if the base currency approach is being used).
Bucket	N	Y	String	Bucket for underlying.
Pool	N	Y	String	CSR Sec non-CTP only Pool for tranche. If empty, copied from Underlying.
Attachment	N	Y	Double	CSR Sec non-CTP only Tranche attachement point. Values between 0.0 and 1.0. If empty, defaults to 0.0.

Detachment	N	Y	Double	CSR Sec non-CTP only Tranche detachment point. Values between 0.0 and 1.0. If empty, defaults to 0.0.	
GIRR Basis Ccy	N	Y	String	GIRR only The counter currency for GIRR cross-currency basis curves.	EUR, USD

Normalization

The contents of this file are normalized and loaded into four stores during the ETL. For each row:

- A description of the "underlying" is generated and added to the **UnderlyingDescription** store. This description is shared with Vega and Curvature.
- A description of the risk-factor is generated and added to the **RiskFactorDescription** store.
- The sensitivities are added to the **Delta** store.

Filling missing data

When the bucket field is omitted, it is filled from the Commodity, CSR, and Equities bucket files (as appropriate). To take advantage of this, the bucket files must be loaded before (or at the same time as) the Delta file.

When the bucket field is provided, some of the fields describing the underlying become optional. For CSR and Equities, these fields can be populated from previously loaded bucket description files.

Risk Class	Optional Fields When Bucket Provided	Bucket File	Bucket Description File
CSR non-Sec	CSRQuality, CSRSector	CSR non-Sec Buckets	*CSR non-Sec Bucket Descriptions*
CSR Sec non-CTP	CSRQuality, CSRSector	CSR Sec non-CTP Buckets	*CSR Sec non-CTP Bucket Descriptions*
CSR Sec CTP	CSRQuality, CSRSector	CSR Sec CTP Buckets	*CSR Sec CTP Bucket Descriptions*

Risk Class	Optional Fields When Bucket Provided	Bucket File	Bucket Description File
Equity	EquityEconomy, EquityMarketCap, EquitySector	*Equity Buckets*	*Equity Bucket Descriptions*
Commodity		*Commodity Buckets*	

> NOTE
>
> The bucket is not sufficient to populate the CSRRating field for CSR non-Sec.

Vega Summary

This file defines the Vega sensitivities, including a description of the risk factor. Full details on each risk factor are explained in the relevant section of the **Atoti FRTB Interpretation and Implementation guide:**

- Commodity
- CSR non-Sec
- CSR Sec CTP
- CSR Sec non-CTP
- Equity
- FX
- GIRR

Field	Key	Null	FieldType	RiskClass	Description	Example
AsOfDate	Y	N	Date 'YYYY-MM-DD'		Timestamp (at close of business) for the data.	
Book	Y	N	String		The book ID.	
LegalEntity	Y	N	String		The legal entity ID.	

RiskClass	Y	N	String	Defines the risk class that the delta data represents. For each risk class the string is the risk class name.	“GIRR”, “CSR non-Sec”, “CSR Sec non-CTP”, “CSR Sec CTP”, “Equity”, “Commodity”, “FX”
OptionMaturity	N	Y	String Array, separated by semicolons	Vega sensitivities are mapped to the vertex of maturity (expiry) dates of the options. If dates are not provided, the Vega sensitivities are assumed to map to prescribed vertices.	“0.5;1;3;5;10”, “6M;1Y”
UnderlyingMaturity	N	Y	String Array, separated by semicolons	Valid for GIRR Only. Represents the residual maturity of the underlying of the option. Vega sensitivity is further mapped to the vertices of underlying points along the risk free curve. If dates are not provided, the Vega sensitivities are assumed to map to prescribed vertices.	“0.5;1;3;5;10”

VegaSensitivities	N	N	Double Array, separated by semicolons	Sensitivity values For all risk classes, if OptionMaturity is empty, the sensitivities must map exactly to the sensitivity dates specified in the FRTB specification (5 values) or 5 (values) x (5 values) for GIRR. For GIRR, this is a 2-dimensional array where the first few values represent the underlying residual maturities for the first option maturity date.
VegaCcy	N	N	String	Currency of the Vega sensitivities.

RiskFactor	Y	Y	String		Risk factor name. The risk factor name is expected to encompass the definition of the risk factor per the FRTB specification ([MAR21.3] to [MAR21.14]), up to the maturities; this name is shared by all maturities. If not provided, it will be generated from the 'Underlying' column. For details on each risk factor, see the relevant section in the *Atoti FRTB Interpretation and Implementation guide*.	
				GIRR	Name of underlying curve (e.g. UsdLibor3m).	
				CSR non-Sec	Name of issuer credit spread curve plus basis (Bond or CDS). If not provided, it is calculated as (Underlying + Type).	"APPLE BOND", "GOOGLE CDS"
				CSR Sec CTP	Name of issuer credit spread curve plus basis (Bond or CDS). If not provided, it is calculated as (Underlying + Type).	

				CSR Sec non-CTP	Name of issuer tranche, credit spread curve. If not provided, it is calculated as (Underlying + Type).	
				Equity	Name of equity issuer. If not provided, it is copied from Underlying.	
				Commodity	Unique commodity name should include commodity name and delivery location. If not provided, it is calculated as (Underlying + Location).	“Brent Le Havre”, “WTI Oklahoma”
				FX	A currency pair (the exchange rate used in the calculation of the sensitivity). If omitted, it is generated from the underlying.	
Type		N	Y	String	CSR risk-factor type, or GIRR curve type. For details on each risk factor, see the relevant section in the *Atoti FRTB Interpretation and Implementation guide*.	
				GIRR	Type of underlying GIRR curve.	
				CSR non-Sec	Defines basis of CSR.	“BOND”, “CDS”
				CSR Sec CTP	Defines basis of CSR.	

				CSR Sec non-CTP	Defines basis of CSR.	
GIRR Ccy	N	Y	String		GIRR only This is the currency of the curve and equals the bucket.	
Underlying	N	N	String		Represents the primary component of the risk factor. For details on each risk factor, see the relevant section in the *Atoti FRTB Interpretation and Implementation guide*.	
				GIRR	Name of curve (may be the same as risk factor).	
				CSR non-Sec	Name of credit issuer.	"APPLE", "GOOGLE"
				CSR Sec CTP	The name underlying the securitisation.	
				CSR Sec non-CTP	Name of the asset pool and tranche.	
				Equity	Name of equity issuer.	
				Commodity	Name of Commodity.	"Brent", "WTI"
				FX	The risk-factor currency pair.	
CSRQuality	N	Y	String		CSR only The Issuer or Tranche credit quality Values must match corresponding buckets file.	IG, HY, NR

CSRSector	N	Y	String	CSR only The issuer or securitisation sector Values must match corresponding buckets file.	For CSR non-Sec and CSR Sec CTP, example values: 'Sovereign', 'Financials', 'Tech' 'Covered Bonds', 'Other' For CSR Sec non-CTP, example values: 'RMBS-Prime', 'RMBS-Mid-Prime', 'RMBS-Sub-Prime', 'CMBS', 'ABS-Auto', 'Other'
(unused)	N	Y	String	Field is ignored.	
EquityEconomy	N	Y	String	Equity only The equity issuer economy. Values must match the equity buckets file.	'Emerging Market', 'Advanced Economy', 'Other'
EquityMarketCap	N	Y	String	Equity only The equity issuer market cap. Values must match the equity buckets file.	'Large' , 'Small', 'Other'

EquitySector	N	Y	String	Equity only Valid for Equity only - needed for Vega bucket Value can be anything but must match the buckets file.	Example values are “CSG” “Telecommunications-Industrials” “Basic Materials” “Financials” “Other”
CommodityLocation	N	Y	String	Commodity only Commodity delivery location.	“Le Havre”, “Oklahoma”
(unused)	N	Y	String	Field is ignored.	
(unused)	N	Y	String	Field is ignored.	
(unused)	N	Y	String	Field is ignored.	
FXCounterCurrency	N	Y	String	Field is ignored.	
Bucket	N	Y	String	Bucket for underlying.	
Pool	N	Y	String	CSR Sec non-CTP only Pool for tranche. If empty, copied from Underlying.	
Attachment	N	Y	Double	CSR Sec non-CTP only Tranche attachement point. Values between 0.0 and 1.0. If empty, defaults to 0.0.	
Detachment	N	Y	Double	CSR Sec non-CTP only Tranche detachment point. Values between 0.0 and 1.0. If empty, defaults to 0.0.	

GIRR Basis Ccy	N	Y	String	GIRR only The counter currency for GIRR cross-currency basis curves.	EUR, USD

Normalization

The contents of this file are normalized and loaded into four stores during the ETL. For each row:

- A description of the "underlying" is generated and added to the **UnderlyingDescription** store. This description is shared with Delta and Curvature.
- A description of the risk-factor is generated and added to the **RiskFactorDescription** store.
- The sensitivities are added to the **Vega** store.

Filling missing data

When the bucket field is omitted, it is filled from the Commodity, CSR, and Equities bucket files (as appropriate). To take advantage of this, the bucket files must be loaded before (or at the same time as) the Vega file.

When the bucket field is provided, some of the fields describing the underlying become optional. For CSR and Equities, these fields can be populated from previously loaded bucket description files.

Risk Class	Optional Fields When Bucket Provided	Bucket File	Bucket Description File
CSR non-Sec	CSRQuality, CSRSector	CSR non-Sec Buckets	*CSR non-Sec Bucket Descriptions*
CSR Sec non-CTP	CSRQuality, CSRSector	CSR Sec non-CTP Buckets	*CSR Sec non-CTP Bucket Descriptions*
CSR Sec CTP	CSRQuality, CSRSector	CSR Sec CTP Buckets	*CSR Sec CTP Bucket Descriptions*
Equity	EquityEconomy, EquityMarketCap, EquitySector	*Equity Buckets*	*Equity Bucket Descriptions*
Commodity		*Commodity Buckets*	

Vega Trade

This file defines the Vega sensitivities, including a description of the risk factor. Full details on each risk factor are explained in the relevant section of the **Atoti FRTB Interpretation and Implementation guide:**

- Commodity
- CSR non-Sec
- CSR Sec CTP
- CSR Sec non-CTP
- Equity
- FX
- GIRR

Field	Key	Null	FieldType	RiskClass	Description	Example
AsOfDate	Y	N	Date 'YYYY-MM-DD'		Timestamp (at close of business) for the data.	
TradeId	Y	N	String		If coming from multiple systems may need to prepend source system to the id for uniqueness	"IR_IRSWAP_LIBOR3M", "EQ_12345677", etc.
RiskClass	Y	N	String		Defines the risk class that the delta data represents. For each risk class the string is the risk class name	"GIRR", "CSR non-Sec", "CSR Sec non-CTP", "CSR Sec CTP", "Equity", "Commodity", "FX"
OptionMaturity	N	Y	String Array, separated by semicolons		Vega sensitivities are mapped to the vertex of maturity (expiry) dates of the options. If dates are not provided, the Vega sensitivities are assumed to map to prescribed vertices.	"0.5;1;3;5;10", "6M;1Y"

UnderlyingMaturity	N	Y	String Array, separated by semicolons	Valid for GIRR Only. Represents the residual maturity of the underlying of the option. Vega sensitivity is further mapped to the vertices of underlying points along the risk free curve. If dates are not provided, the Vega sensitivities are assumed to map to prescribed vertices.	“0.5;1;3;5;10”
VegaSensitivities	N	N	Double Array, separated by semicolons	Sensitivity values For all risk classes, if OptionMaturity is empty the sensitivities must map exactly to the sensitivity dates specified in the FRTB specification (5 values) or 5 (values) x (5 values) for GIRR. For GIRR, this is a 2-dimensional array where the first few values represent the underlying residual maturities for the first option maturity date	
VegaCcy	N	N	String	Currency of the Vega sensitivities	

RiskFactor		Y	Y	String		Risk factor name. It is expected that the risk factor name encompasses the definition of the risk factor per the FRTB specification ([MAR21.3] to [MAR21.14]), up to the maturities; this name is shared by all maturities. If not provided, it will be generated from the 'Underlying' column. For details on each risk factor, see the relevant section in the *Atoti FRTB Interpretation and Implementation guide*.
					GIRR	Name of underlying curve (e.g. UsdLibor3m).
					CSR non-Sec	Name of issuer credit spread curve plus basis (Bond or CDS). If not provided, then it is calculated as (Underlying + Type).
					CSR Sec CTP	Name of issuer credit spread curve plus basis (Bond or CDS). If not provided, then it is calculated as (Underlying + Type).

				CSR Sec non-CTP	Name of issuer tranche, credit spread curve. If not provided, then it is calculated as (Underlying + Type).	
				Equity	Name of equity issuer. If not provided, then it is copied from Underlying.	
				Commodity	Unique commodity name should include commodity name and delivery location. If not provided, then it is calculated as (Underlying + Location).	"Brent Le Havre", "WTI Oklahoma"
				FX	A currency pair (the exchange rate used in the calculation of the sensitivity). If omitted, it is generated from the underlying.	
Type		N	Y	String	CSR risk-factor type, or GIRR curve type. For details on each risk factor, see the relevant section in the *Atoti FRTB Interpretation and Implementation guide*.	
				GIRR	Type of underlying GIRR curve.	
				CSR non-Sec	Defines basis of CSR.	"BOND", "CDS"
				CSR Sec CTP	Defines basis of CSR.	

				CSR Sec non-CTP	Defines basis of CSR.	
GIRR Ccy	N	Y	String		GIRR only This is the currency of the curve and equals the bucket.	
Underlying	N	N	String		Represents the primary component of the risk factor. For details on each risk factor, see the relevant section in the *Atoti FRTB Interpretation and Implementation guide*.	
				GIRR	Name of curve (may be the same as risk factor).	
				CSR non-Sec	Name of credit issuer.	"APPLE", "GOOGLE"
				CSR Sec CTP	The name underlying the securitisation.	
				CSR Sec non-CTP	Name of the asset pool and tranche.	
				Equity	Name of equity issuer.	
				Commodity	Name of Commodity.	"Brent", "WTI"
				FX	The risk-factor currency pair.	
CSRQuality	N	Y	String		CSR only The Issuer or Tranche credit quality Values must match corresponding buckets file	IG, HY, NR

CSRSector	N	Y	String	CSR only The issuer or securitisation sector Values must match corresponding buckets file	For CSR non-Sec and CSR Sec CTP, example values: 'Sovereign', 'Financials', 'Tech' 'Covered Bonds', 'Other' For CSR Sec non-CTP, example values: 'RMBS-Prime', 'RMBS-Mid-Prime', 'RMBS-Sub-Prime', 'CMBS', 'ABS-Auto', 'Other'
(unused)	N	Y	String	Field is ignored.	
EquityEconomy	N	Y	String	Equity only The equity issuer economy. Values must match the equity buckets file.	'Emerging Market', 'Advanced Economy', 'Other'
EquityMarketCap	N	Y	String	Equity only The equity issuer market cap. Values must match the equity buckets file.	'Large' , 'Small', 'Other'

EquitySector	N	Y	String	Equity only Valid for Equity only - needed for Vega bucket Value can be anything but must match the buckets file	Example values are “CSG” “Telecommunications-Industrials” “Basic Materials” “Financials” “Other”
CommodityLocation	N	Y	String	Commodity only Commodity delivery location	“Le Havre”, “Oklahoma”
(unused)	N	Y	String	Field is ignored.	
(unused)	N	Y	String	Field is ignored.	
(unused)	N	Y	String	Field is ignored.	
FXCounterCurrency	N	Y	String	Field is ignored.	
Bucket	N	Y	String	Bucket for underlying.	
Pool	N	Y	String	CSR Sec non-CTP only Pool for tranche. If empty, copied from Underlying.	
Attachment	N	Y	Double	CSR Sec non-CTP only Tranche attachement point. Values between 0.0 and 1.0. If empty, defaults to 0.0.	
Detachment	N	Y	Double	CSR Sec non-CTP only Tranche detachment point. Values between 0.0 and 1.0. If empty, defaults to 0.0.	

GIRR Basis Ccy	N	Y	String	GIRR only The counter currency for GIRR cross-currency basis curves.	EUR, USD

Normalization

The contents of this file are normalized and loaded into four stores during the ETL. For each row:

- A description of the "underlying" is generated and added to the **UnderlyingDescription** store. This description is shared with Delta and Curvature.
- A description of the risk-factor is generated and added to the **RiskFactorDescription** store.
- The sensitivities are added to the **Vega** store.

Filling missing data

When the bucket field is omitted, it is filled from the Commodity, CSR, and Equities bucket files (as appropriate). To take advantage of this, the bucket files must be loaded before (or at the same time as) the Vega file.

When the bucket field is provided, some of the fields describing the underlying become optional. For CSR and Equities, these fields can be populated from previously loaded bucket description files.

Risk Class	Optional Fields When Bucket Provided	Bucket File	Bucket Description File
CSR non-Sec	CSRQuality, CSRSector	CSR non-Sec Buckets	*CSR non-Sec Bucket Descriptions*
CSR Sec non-CTP	CSRQuality, CSRSector	CSR Sec non-CTP Buckets	*CSR Sec non-CTP Bucket Descriptions*
CSR Sec CTP	CSRQuality, CSRSector	CSR Sec CTP Buckets	*CSR Sec CTP Bucket Descriptions*
Equity	EquityEconomy, EquityMarketCap, EquitySector	*Equity Buckets*	*Equity Bucket Descriptions*
Commodity		*Commodity Buckets*	

IMA Input Files

This section describes the input file formats used for the Internal Models Approach.

- *Capital Charge Calculation Input Files*
- *P&L Attribution Tests and Backtesting File Formats*

Capital Charge Calculation Input Files

- *DRC Input Files*
- *IMCC and SES Input Files*

DRC Input Files

- *DRC Non Linear Recovery Trade*
- *DRC Scenario Count*
- *DRC Scenarios*
- *DRC Summary (IMA)*
- *DRC Trade Level (IMA)*

DRC Non Linear Recovery Trade

This file contains the P&L values of trades and DRC risk-factors for different scenarios.

This DRC Non Linear Recovery Trade file type is identified using the pattern: ****/DRC_NonLinear_Recovery_*.csv** (as specified by drc.non-linear.recovery.file-pattern). This file is loaded using the **DRC_NONLINEAR_RECOVERY** topic.

Field	Key	Null	FieldType	Description	Example
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.	
TradeId	Y	N	String	Trade Identifier	
ObligorId	Y	Y	String	Identifier of the Obligor	

Seniority	Y	Y	String	Indication of the Seniority level the recovery rate applies to. This will be used to look up the Recovery rate in the DRC scenario file.
Ccy	N	N	String	The currency of the P&L values
ScenarioIds	N	N	Vector of Integers	List of Scenario ids which include the trade as defaulting. Scenarios are numbered from 1 to the scenario count (inclusive).
PnL	N	N	Vector of Double	The P&L values corresponding to the Scenario ids. The first entry corresponds to scenario id 1.

DRC Scenario Count

This file contains a single entry which is the number of IMA DRC scenarios for the date

This DRC Scenario Count file type is identified using the pattern: ****/DRC_SCENARIO_COUNT*.csv** (as specified by drc.scenario.count.file-pattern). This file is loaded using the **DRC_SCENARIO_COUNT** topic.

Field	Key	Null	FieldType	Description	Example
Count	N	N	Integer	The number of scenarios. Scenarios are numbered from 1 to this count (inclusive).	
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.	

DRC Scenarios

This file describes the recovery rates for DRC risk-factors and trades using a linear recovery approach.

This DRC Scenarios file type is identified using the pattern: ****/DRC_LINEAR_SCENARIOS*.csv** (as specified by drc.linear.scenarios.file-pattern). This file is loaded using the **DRCScenarios** topic.

Field	Key	Null	FieldType	Description	Example

AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.
ScenarioId	Y	N	Integer	The numerical id of the scenario. Scenarios are numbered from 1 to the scenario count (inclusive).
ObligorId	Y	N	String	The identifier of the Obligor, which will match the obligor in the trade file.
Seniority	Y	N	String	An indication of the Seniority level of the obligor that the recovery rates are applicable for.
ScenarioRecoveryRate	N	N	Double	A value between 0 and 1 representing the amount of the Notional recovered from the defaulted Obligor in the given scenario.
DefaultDate	N	N	Date 'YYYY-MM-DD'	Default date for the scenario.

DRC Summary (IMA)

This file contains the historical summary data for the IMA DRC calculations. This is the IMA DRC P&L vectors at the book and legal entity level.

This DRC Summary (IMA) file type is identified using the pattern: ****/IMA_DRC_Summary*.csv** (as specified by ima.drc.summary.file-pattern). This file is loaded using the **IMA_DRC_Summary** topic.

Field	Key	Null	FieldType	Description	Example
Book	Y	N	String	Book Identifier	Book A
Legal Entity	Y	N	String	Legal Entity Identifier	ActiveBank UK
Currency	N	N	String	The currency of the P&L values	USD

Scenario Ids	N	Y	Vector of Integer	In case of sparse vector representation this shows the list of non-null values. The first element is 1.	1;4;825
PnL	N	N	Vector of Double	The P&L values. If the previous field is not null, the representation is sparse and the values are set at the pre-defined position ids (starting from 1). Or else it's a simple standard double vector.	-9381655.00;-328945 2.15;-3410423.25
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.	2020-06-05

DRC Trade Level (IMA)

This file describes the recovery rates for the IMA DRC trades using a linear approach.

This DRC Trade Level (IMA) file type is identified using the pattern: ****/DRC_Trade_*.csv** (as specified by drc.trade.file-pattern). This file is loaded using the **DRC** topic.

Field	Key	Null	FieldType	Description	Example
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.	2018-06-29
TradeId	Y	N	String	If coming from multiple systems may need to prepend source system to the id for uniqueness	"IR_IRSWAP_LIBOR 3M", "EQ_12345677", etc.
RiskClass			String	Applicable to SA only Not used for IMA	
ObligorId	Y	N	String	ID of the Obligor. For IMA, must match ObligorId in DRC Scenarios file.	
ObligorCategory			String	Applicable to SA only Not used for IMA.	

Instrument LGD Type			String	Applicable to SA only Not used for IMA	
Seniority	N	N	String	Seniority of the exposure. For IMA, must match Seniority in DRC Scenarios file.	Senior
Direction			String	Applicable to SA only Not used for IMA	
Maturity	N	Y	String	Maturity of the trade	“1D”, “2W”, “12M”, “1Y”, or date “YYYY-MM-DD”
Rating			String	Applicable to SA only Not used for IMA	
Notional			Double	Applicable to SA only Not used for IMA	
MarketValue			Double	Applicable to SA only Not used for IMA	
GrossJTD			String	Applicable to SA only Not used for IMA	
Ccy	N	N	String	Currency code for ‘RecoveryValues’.	USD
Tranche			String	Applicable to SA only Not used for IMA	
Region			String	Applicable to SA only Not used for IMA	
AssetClass			String	Applicable to SA only Not used for IMA	
Attachment			Double	Applicable to SA only Not used for IMA	
Detachment			Double	Applicable to SA only Not used for IMA	

RecoveryRates	N	N	Vector of doubles	Recovery Rate for the Obligor in the given scenario. Note: If linear scenarios approach is used, then this field must contain a vector of generic recovery rates (for example, 0;0.5;1) for linear interpolation of simulated PL (see RecoveryValues field) based on simulated recovery rates (see linear scenarios file).	
RecoveryValues	N	N	Vector of doubles	Recovery Values corresponding to the Recovery Rate. Note: If linear scenarios approach is used, then this field must contain a vector of jump-to-recovery values, corresponding to the RecoveryRates vector.	
Type	N	N	String	DRC Sec non-CTP Rating Type, DRC Sec CTP Rating Type; Rating type: STC / non-STC STC stands for Simple Transparent Comparable	STC
RiskWeight	N	N	Double	Applicable to SA only Not used for IMA	
Adjustment	N	N	Double	Applicable to SA only Not used for IMA	
Bucket	N	N	String	Applicable to SA only Not used for IMA	
Zero Risk Weight	N	N	String	Applicable to SA only Not used for IMA	

This file is also used in the SA, see *sa-drc-trade*

IMCC and SES Input Files

- *Expected Shortfall PL Trade*
- *IMA ES Scenario FX Rates*
- *IMA PL Scenarios*
- *IMA Summary*
- *Multiplier*
- *Risk Factors*

Expected Shortfall PL Trade

This file contains input fields for various risk scenarios, liquidity horizons and risk classes, used to calculate the Expected shortfall.

For summary data used to calculate the historical averages, see *ima-summary*.

This Expected Shortfall PL Trade file type is identified using the pattern: ****/IMA_*_Trades*.csv** (as specified by ima.trades.file-pattern). This file is loaded using the **IMA_Trades** topic.

Field	Key	Null	FieldType	Description	Example
DataSet	Y	Y	String	The data set to which the entry belongs. The following different values are possible: • "Full Set Current": data for the last 12 months • "Reduced Set Stressed": data with the reduced set of risk factors for the 12-month stress period • "Reduced Set Current": data with the reduced set of risk factors for the last 12 months Note: For non-modellable risk-factors, this value should be blank.	
TradeId	Y	N	String	The trade Id	

RiskFactor	Y	Y	String	The risk factor Note: This is required for non-modellable risk-factors, but may be blank for modellable risk-factors.
RiskClass	Y	N	String	The risk class, which will be one of the following: • GIRR • CSR • Equity • Commodity • FX • allin
LiquidityHorizon	Y	Y	String	A String containing a list of integer values with ';' as separator. The Liquidity Horizon in days: 10, 20, 40, 60, or 120 Note: For non-modellable risk-factors, this value should be blank (though it may be set to 10 without causing any problems). You have to ensure yourself that there is no gap on the liquidity horizon. For instance a horizon of 40 will also apply on 10 and 20 so you must specify '40;20;10'.
Currency	N	N	String	The currency in which the PnL vector is expressed.

PV	N	N	Double Vector	The vector of PV values calculated for each scenario. The scenarios are calibrated to the 12-month stress or current periods. For modellable risk-factors, these PV vectors are aggregated across DataSet, RiskClass, and Liquidity Horizon while for NMRFs they are aggregated across the risk-factor. Hence the list of scenarios must be consistent for all PV vectors with these fields in common. The P&L vector is obtained by subtracting the Base PV from each value in this vector.
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.
Base PV	N	Y	Double	The PV for the base scenario. If this value is not provided, then the PV vector becomes the P&L vector.

IMA ES Scenario FX Rates

This file provides FX spot rates used in IMA ES scenarios.

This IMA ES Scenario FX Rates file type is identified using the pattern: ****/IMA_ES_ScenarioFX*.csv** (as specified by ima.es.scenario-fx.file-pattern). This file is loaded using the **EsScenarioFxRates** topic.

Field	Key	Null	FieldType	Description	Example

DataSet	Y	Y	String	The data set to which the entry belongs. The following different values are possible: • "Full Set Current": data for the last 12 months • "Reduced Set Stressed": data with the reduced set of risk factors for the 12-month stress period • "Reduced Set Current": data with the reduced set of risk factors for the last 12 months
RiskClass	Y	N	String	The risk class, which will be one of the following: • GIRR • CSR • Equity • Commodity • FX • allin
LiquidityHorizon	Y	Y	String	The Liquidity Horizon in days: 10, 20, 40, 60, or 120.
BaseCurrency	Y	N	String	The left side of the currency pair.
CounterCurrency	Y	N	String	The right side of the currency pair
Rates	N	N	Double Vector	The vector of FX rates between the two currencies. The vector is index by the same scenarios as the corresponding IMA ES PV vector.
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.

FXHistorical Topic

The EsScenarioFxHistorical topic has the same file format as IMA_ES_ScenarioFX.csv. The difference is the file location.

- When loading the EsScenarioFxRates topic, the as-of date is provided in the scope and the file will be loaded from the corresponding directory.
- When loading the EsScenarioFxHistorical topic, no as-of date is provided in the scope and all IMA_ES_ScenarioFX.csv files from the historical directory are loaded.

FxRate Lookup

The $_{FxRate}$ for converting the input currency value into the target currency value is obtained based on the data in the EsScenarioFxRates store.

Similar to the scalar base FX rates, a common currency is used to calculate cross rates.

IMA PL Scenarios

This file contains input fields indicating the various PL scenarios corresponding to the Expected Shortfall PL Trade Input file.

This IMA PL Scenarios file type is identified using the pattern: ****/IMA_Scenarios*.csv** (as specified by ima.scenarios.file-pattern). This file is loaded using the **Scenarios** topic.

Field	Key	Null	FieldType	Description	Example
DataSet	Y	N	String	Exactly the same as for 'Dataset' as defined for the TradeInputs file.	
Index	N	N	Integer	The index in the vector representing the PnL - the first element has index 0.	
Scenario	Y	N	String	The string representing the scenario corresponding to the index - for this reason, it is expected that the value of 'Scenario' should be distinct for each line in the input file.	

AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.

IMA Summary

This file contains input fields for various risk scenarios, liquidity horizons and risk classes, used to calculate the Expected shortfall.

This file is similar to the *expected-shortfall-pl-trade* file, but with these differences:

- Loaded into the IMA Summary cube
- Does not contain trade-level data
- Intended for the historical averages

This IMA Summary file type is identified using the pattern: ****/IMA_Summary*.csv** (as specified by ima.summary.file-pattern). This file is loaded using the **IMA_Summary** topic.

Field	Key	Null	FieldType	Description	Example
DataSet	Y	Y	String	The data set to which the entry belongs. The following different values are possible: • "Full Set Current": data for the last 12 months • "Reduced Set Stressed": data with the reduced set of risk factors for the 12-month stress period • "Reduced Set Current": data with the reduced set of risk factors for the last 12 months Note: For non-modellable risk-factors, this value should be blank.	
Book	Y	N	String	The book Id	
LegalEntity	Y	N	String	The legal entity Id	

RiskFactor	Y	Y	String	The risk factor Note: This is required for non-modellable risk-factors, but may be blank for modellable risk-factors.
RiskClass	Y	N	String	The risk class, which will be one of the following: • GIRR • CSR • Equity • Commodity • FX • allin Note: For non-modellable, non-idiosyncratic risk-factors, this value should be blank.
LiquidityHorizon	Y	Y	Integer[]	The Liquidity Horizon in days: 10, 20, 40, 60, or 120 Note: For non-modellable risk-factors, this value should be blank (though it may be set to 10 without causing any problems). You have to ensure yourself that there is no gap on the liquidity horizon. For instance a horizon of 40 will also apply on 10 and 20 so you must specify '40;20;10'.
Currency	N	N	String	The currency in which the PnL vector is expressed.

PV	N	N	Double Vector	The vector of PV values calculated for each scenario. The scenarios are calibrated to the 12-month stress or current periods. For modellable risk-factors, these PV vectors are aggregated across DataSet, RiskClass, and Liquidity Horizon while for NMRFs they are aggregated across the risk-factor. Hence the list of scenarios must be consistent for all PV vectors with these fields in common. The P&L vector is obtained by subtracting the Base PV from each value in this vector.	
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.	
Base PV	N	Y	Double	The PV for the base scenario. If this value is not provided, then the PV vector becomes the P&L vector.	

Multiplier

Backtesting dependent multiplier (see [MAR32.9]).

This Multiplier file type is identified using the pattern: ****/Multiplier.csv** (as specified by multiplier.file-pattern). This file is loaded using the **IMAMultiplier** topic.

Field	Key	Null	FieldType	Description	Example
NumExceptions	Y	N	Integer	The number of exceptions encountered in the backtesting of the bank's daily VaR.	

Multiplier	N	N	Double	The multiplier used in the calculation of the aggregated charge associated with approved desks (see [MAR33.41] and [MAR33.42]).	
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.	
ParameterSet	Y	Y	String	The parameter set to which the multiplier belongs (default = BCBS).	BCBS

Risk Factors

This file describes the IMA risk-factors.

This Risk Factors file type is identified using the pattern: **`**/IMARiskFactors*.csv`** (as specified by ima.risk-factors.file-pattern). This file is loaded using the **IMARiskFactors** topic.

Field	Key	Null	FieldType	Description	Example
RiskFactor	Y	Y	String	The risk factor – the values must be the same as in the 'RiskFactor' field of the Expected Shortfall PL file. It is optional for modellable risk-factors and required for non-modellable risk-factors.	

RiskClass	Y	N	String	The risk class, which will be one of the following: • GIRR, • CSR, • Equity, • Commodity, • FX, • allin Note: For non-modellable, non-idiosyncratic trades, this value should be blank.
NMRF	N	Y	'Y' or 'N'	NMRF stands for 'Non-Modellable Risk Factor' – it is a flag set to 'N' for modellable risk factors and 'Y' for non-modellable risk factors.
Idiosyncratic	N	Y	'Y' or 'N'	Indicates whether or not the Non Modellable Risk Factor is Idiosyncratic
(unused)	N	Y		Field is ignored.
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.

IMARiskFactorsHistorical Topic

The IMARiskFactorsHistorical topic has the same file format as IMARiskFactors.csv. The difference is the file location.

- When loading the IMARiskFactors topic, the as-of date is provided in the scope and the file will be loaded from the corresponding directory.
- When loading the IMARiskFactorsHistorical topic, no as-of date is provided in the scope and all IMARiskFactors.csv files from the historical directory are loaded.

Modellable risk-factors do not need to be listed in this file. However, non-modellable risk-factors need to have the NMRF flag set.

P&L Attribution Tests and Backtesting File Formats

The following three subsections describe the content of the input files for the PL Summary Cube (a single input file called the PL Summary file) and the PL Granular Cube (two input files called the PL VaR Vector file and the PL VaR Scenario file). Each sub-section provides descriptions of the formats of the required input files.

- *PL Summary*
- *PL Summary Scenarios*
- *PL VaR Scenario*
- *PL VaR Vector*

PL Summary

The desk-level P&L and VaR values. The P&L values represent the EOD valuations. The VaR values are the prediction for the next day.

This PL Summary file type is identified using the pattern: ****/PL_Summary*.csv** (as specified by pl.summary.file-pattern). This file is loaded using the **PLSummary** topic.

Field	Key	Null	FieldType	Description	Example
AsOfDate	Y	N	Date 'YYYY-MM-DD'	The as-of date (T-1). Timestamp (at close of business) for the data	
Book	Y	N	String	The Book	
Legal Entity	Y	N	String	The Legal Entity	
Ccy	Y	N	String	The currency of P&L and VaR values	
Actual PL	N	N	Double	The Actual P&L value	
Hypothetical PL	N	N	Double	The Hypothetical P&L value	
Theoretical PL	N	N	Double	The Risk-Theoretical P&L value	
PnL	N	N	Vector	VaR P&L Vector values	

PL Summary Scenarios

This file describes the scenarios in the P&L vector used in PL Summary Cube for the VaR backtesting

This PL Summary Scenarios file type is identified using the pattern: ****/PLSummary_Scenarios*.csv** (as specified by pl.summary.scenarios.file-pattern). This file is loaded using the **PLSummaryScenarios** topic.

Field	Key	Null	FieldType	Description	Example
AsOfDate	Y	N	Date 'YYYY-MM-DD'	The as-of date (T-1). Timestamp (at close of business) for the data.	
Index	N	N	Unsigned Integer	The index of the VaR scenario (within the VaR P&L vector)	
Scenario	Y	N	String	The name of the VaR scenario	

PL VaR Scenario

This file describes the scenarios in the P&L vector used in trade level PL Cube for the VaR backtesting.

This PL VaR Scenario file type is identified using the pattern: ****/PL_VaR_Scenario*.csv** (as specified by pl.var.scenario.file-pattern). This file is loaded using the **PLScenarios** topic.

Field	Key	Null	FieldType	Description	Example
AsOfDate	Y	N	Date 'YYYY-MM-DD'	The as-of date (T-1). Timestamp (at close of business) for the data.	
Index	N	N	Unsigned Integer	The index of the VaR scenario (within the VaR P&L vector)	
Scenario	Y	N	String	The name of the VaR scenario	

PL VaR Vector

This file contains the trade-level P&L values used to calculate the VaR for backtesting.

This PL VaR Vector file type is identified using the pattern: ****/PL_VaR_Vector*.csv** (as specified by pl.var.vector.file-pattern). This file is loaded using the **PLTrades** topic.

Field	Key	Null	FieldType	Description	Example

AsOfDate	Y	N	Date['YYYY-MM-DD']	The as-of date (T-1). Timestamp (at close of business) for the data.
TradeId	Y	N	String	The Trade Id
Ccy	N	N	String	The currency of VaR P&L Vector values.
Actual PL	N	N	Double	The Actual P&L value
Hypothetical PL	N	N	Double	The Hypothetical P&L value
Theoretical PL	N	N	Double	The Risk-Theoretical P&L value
PnL	N	N	Vector	VaR P&L Vector values

Stress Calibration Input Files

This section describes the input files used for Stress Calibration.

- *Stress Calibration PL Trades*
- *Stress Calibration Scenario FX Rates*
- *Stress Calibration Scenarios*

Stress Calibration PL Trades

This file contains simulated PL vectors over a long historical observation window, as well as position and scenario attributes to calibrate the stress period. The file includes both IMCC and SES simulated PL vectors.

This Stress Calibration PL Trades file type is identified using the pattern: ****/StressCalibration_*_Trades*.csv** (as specified by stress-calibration.trades.file-pattern). This file is loaded using the **StressCalibration_Trades** topic.

Field	Key	Null	FieldType	Description	Example
RiskFactorSet	Y	Y	String	For modellable risk-factors, Full or Reduced. For non-modellable risk-factors, leave blank.	

TradeId	Y	N	String	The trade Id
RiskFactor	Y	Y	String	The risk factor Note This is required for non-modellable risk-factors, but may be blank for modellable risk-factors.
RiskClass	Y	N	String	The risk class, which will be one of the following: • GIRR • CSR • Equity • Commodity • FX • allin
LiquidityHorizon	Y	Y	Integer	The Liquidity Horizon in days: 10, 20, 40, 60, or 120 Note For non-modellable risk-factors, this value should be blank (though it may be set to 10 without causing any problems). The ETL will ensure that there are no gaps in the liquidity horizon. If there is a gap in the file, the ETL will copy the liquidity horizon from the next highest P&L vector. For example, if a liquidity horizon of 40 is supplied, but 20 and 10 are not included, then the gap-filling will copy the P&L vector from the liquidity horizon of 40 to 20 and 10.
Currency	N	N	String	The currency in which the PnL vector is expressed.

PV	N	N	Double	The historical PV vector. The entries in this vector represent the PV for each historical date. The values are separated by a semi-colon. This vector may optionally represent the P&L vector by setting the base PV to zero.	
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.	
Base PV	N	Y	Double	The PV for the base scenario. If this value is not provided, then the PV vector becomes the P&L vector.	

Stress Calibration Scenario FX Rates

This file provides FX spot rates used in stress calibration ES scenarios.

This Stress Calibration Scenario FX Rates file type is identified using the pattern: ****/StressCalibration_ScenarioFX*.csv** (as specified by stress-calibration.scenario-fx.file-pattern). This file is loaded using the **StressCalibrationScenarioFxRates** topic.

Field	Key	Null	FieldType	Description	Example
RiskFactorSet	Y	Y	String	The risk-factor set to which the entry belongs. The following different values are possible: • "Full": data for the full set of risk-factors • "Reduced": data for the reduced set of risk factors	

RiskClass	Y	N	String	The risk class, which will be one of the following: • GIRR • CSR • Equity • Commodity • FX • allin
LiquidityHorizon	Y	Y	String	The Liquidity Horizon in days: 10, 20, 40, 60, or 120.
BaseCurrency	Y	N	String	The left side of the currency pair.
CounterCurrency	Y	N	String	The right side of the currency pair.
Rates	N	N	Double Vector	The vector of FX rates between the two currencies. The vector is index by the same scenarios as the corresponding PV vector.
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.

FXHistorical Topic

The EsScenarioFxHistorical topic has the same file format as IMA_ES_ScenarioFX.csv. The difference is the file location.

- When loading the EsScenarioFxRates topic, the as-of date is provided in the scope and the file will be loaded from the corresponding directory.
- When loading the EsScenarioFxHistorical topic, no as-of date is provided in the scope and all IMA_ES_ScenarioFX.csv files from the historical directory are loaded.

FxRate Lookup

The $FxRate$ for converting the input currency value into the target currency value is obtained based on the data in the EsScenarioFxRates store.

Similar to the scalar base FX rates, a common currency is used to calculate cross rates.

Stress Calibration Scenarios

Describes date assigned to each index of historical PnL vector in stress calibration trades file

This Stress Calibration Scenarios file type is identified using the pattern: ****/StressCalibration_Scenarios*.csv** (as specified by stress-calibration.scenarios.file-pattern). This file is loaded using the **StressCalibrationScenarios** topic.

Field	Key	Null	FieldType	Description	Example
Type	Y	N	String	For IMCC this is the risk-factor set ("Full" or "Reduced"). For SES (NMRF), this is the risk-class.	
Index	N	N	Integer	The index in the vector representing the PnL - the first element has index 0.	
Scenario	Y	N	String	The string representing the scenario corresponding to the index - for this reason, it is expected that the value of 'Scenario' should be distinct for each line in the input file.	
AsOfDate	Y	N	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.	