FRTB Accelerator
(IMA and IMA Summary Approach)
Input File Formats
Version 2.1

12 August 2019

Contents

1. Overview

This document contains the file formats for the CSV files that can be used by clients as input to the ActivePivot FRTB (IMA) Accelerator Reference Implementation.

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.

The sets of files for IMA and IMA Summary include:

- configuration files
- capital charge calculation files
- P&L Attribution Tests and Backtesting files
- IMCC and SES files

Note on glob: The FRTB Accelerator uses glob patterns with the (*) asterisk wildcard character to identify the relevant file names for each category of input file. 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 the `frtb-data-load.properties` file.

1.1 Configuration Files

These files are shared between IMA, IMA Summary and SA and are included in this document for completeness for those clients only implementing IMA:

- The Trade Attributes Input File (see Section 2 – Trade Attributes Input File Format)
- The Legal Entity Parent Child Input File (see Section 3.1 – Portfolio Input File Formats)
- The Book Parent Child Input File (see Section 3.2 – Portfolio Input File Formats)
- The FX Rates Input File (see Section 4 – FX Rates Input File Format)

1.2 Capital Charge Calculation Input Files

- The Expected Shortfall PL Input Files (see Section 5.1 - Expected Shortfall PL Trade Input File Format)
- The Risk Factors Input File (see Section 5 – IMCC and SES Input File Formats)
- The PL Scenarios Input File (see Section 5 – IMCC and SES Input File Formats)

- DRC inputs:DRC Trade Level, DRC Non Linear Recovery Trade and DRC Scenarios Files. (See Section 6 – DRC Input File Formats)
- IMA History Input File (Section 8 – IMA History Input File Format)
- Multiplier Input Configuration file (Section 9 – Multiplier Input File Format)

1.3 P&L Attribution Tests and Backtesting File Formats

- The PL Summary Input File (See Section 7 – P&L Attribution Tests and Backtesting Input File Formats)
- The PL VaR Vector Input File (See Section 7 – P&L Attribution Tests and Backtesting Input File Formats)
- The PL VaR Scenario Input File (See Section 7 – P&L Attribution Tests and Backtesting Input File Formats)

1.4 IMCC and SES Input Files

- IMA Summary Input Files (see Section 9 – IMCC and SES Input File Formats)
- The Risk Factors Input File (see Section 9 – IMCC and SES Input File Formats)

2. Trade Attributes Input File Format

2.1 The File Pattern Match

The pattern match for the Trade Attributes file is: ****{Trade_Attributes,SA_Trades}*.csv**
(see **"Note on glob"** in the Overview section)

2.2 The Input Fields

The Trades/Positions input fields are shown within the following table:

Component	AsOfDate	TradeId	Book	Legal Entity	Notional	Notional Ccy	PresentValue	PVCcy	ResidualRisk	ExoticUnderlying	OtherResidualRiskType	Component
SBM	✓	✓	✓	✓			Opt	Opt				SBM
RRAO	✓	✓	✓	✓	✓	✓			✓	✓	Opt	RRAO
DRC non-Sec	✓	✓	✓	✓	✓	✓	✓	✓				DRC non-Sec
DRC Sec non-CTP	✓	✓	✓	✓	✓	✓	✓	✓				DRC Sec non-CTP

Three cells are marked as 'Opt' meaning Optional. The definitions of the above fields are as follows:

Field	Field Type	Description
AsOfDate	Date [YYYY-MM-DD]	Timestamp (at close of business) for the data.
TradeId	String	(e.g. "IR_IRSWAP_LIBOR3M", "EQ_12345677", etc.) – if coming from multiple systems may need to prepend source system to the id for uniqueness.
Book	Alphanumeric String	The book to map the trade to (must match the node in the Book Hierarchy).
Legal Entity	Alphanumeric String	Legal Entity to map the trade to (must match the node in the Legal Entity Hierarchy).
Notional	Double	Notional of trade/position (used for RRAO and DRC).
NotionalCcy	String	Currency of notional.
PresentValue	Double	Current present value of trade/position (used in curvature and DRC).
PVCcy	String	Currency of present value.
ResidualRisk	'Y' or 'N' (optional)	Indicates trade/position subject to residual risk add-on.

ExoticUnderlying	'Y' or 'N' (optional)	If yes and residual risk, risk weight = 1% otherwise if residual risk, weight = .1%.
OtherResidualRiskType	String	Optional data - valid if ExoticUnderlying = 'N'. Suggested valid values are "GAP", "CORRELATION",'BEHAVIORIAL", "OTHER".

3. Portfolio Input File Format

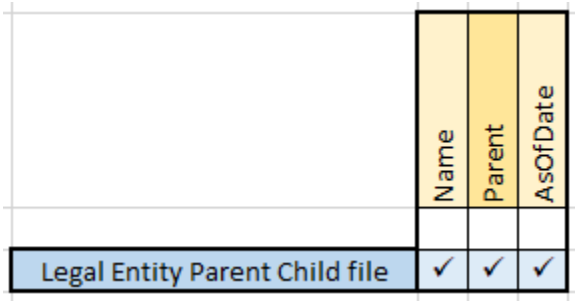
3.1 Legal Entity Parent Child Input File Format

3.1.1 The File Pattern Match

The pattern match for the Legal Entity Parent Child file is: ****/LegalEntityParentChild*.csv** (see **"Note on glob"** in the Overview section)

3.1.2 The Input Fields

The Legal Entity Parent Child input fields are shown within the following table:



The definitions of the above fields are as follows:

Field	Field Type	Description
Name	String	Name of the Legal Entity.
Parent	String	Name of the parent Legal Entity (or null if there is no parent).
AsOfDate	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.

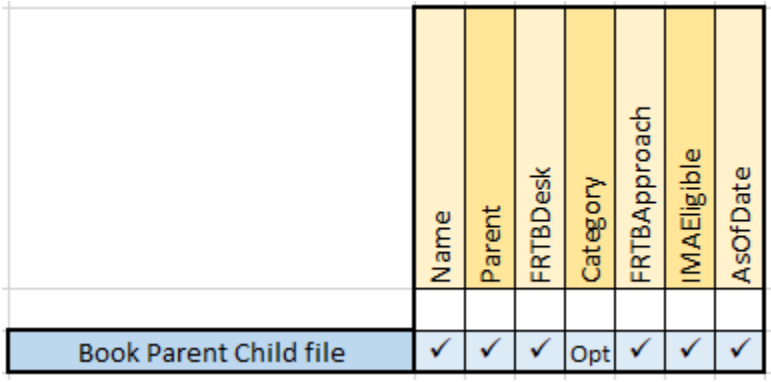
3.2 Book Parent Child Input File Formats

3.2.1 The File Pattern Match

The pattern match for the Book Parent Child file is: ****/BookParentChild*.csv**
(see **"Note on glob"** in the Overview section)

3.2.2 The Input Fields

The Book Parent Child input fields are shown within the following table:



	Name	Parent	FRTBDesk	Category	FRTBApproach	IMAEligible	AsOfDate
Book Parent Child file	✓	✓	✓	Opt	✓	✓	✓

The definitions of the above fields are as follows:

Field	Field Type	Description
Name	String	Name of the node in the Book/Desk hierarchy.
Parent	String	Name of the parent node (or null if there is no parent).
FRTBDesk	'Y' or 'N'	This is set to 'Y' if this node is a desk for the purposes of FRTB. If so, then 'FRTBApproach' and 'IMAEligible' are populated – otherwise they are empty.
Category	String	Optional category for the node (and all Descendant nodes).
FRTBApproach	'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	'R', 'A', or 'G'	For FRTB desks, this field indicates whether which zone the desk falls into according to the PLA test metrics [MAR32.42]. If not an FRTB desk, this field is empty.
AsOfDate	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.

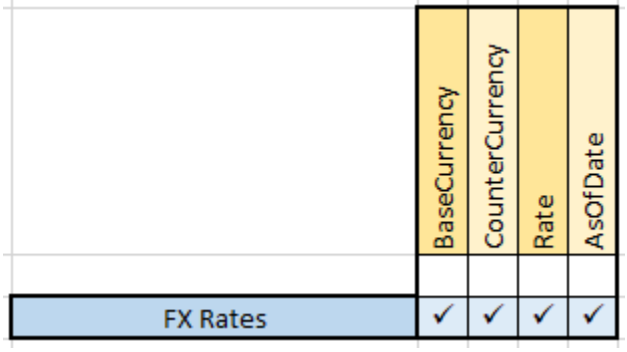
4. FX Rates Input File Format

4.1 The File Pattern Match

The pattern match for the FX Rates file is: ****/FXData*.csv**
(see **"Note on glob"** in the Overview section)

4.2 The Input Fields

The FX Rates input fields are shown within the following table:



The definitions of the above fields are as follows:

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

5. IMCC and SES Input File Formats

5.1 Expected Shortfall PL Trade Input File Format

5.1.1 The File Pattern Match

The pattern match for the Expected Shortfall PL Trade file is: ****/IMA_*_Trades*.csv***
(see **"Note on glob"** in the Overview section)

5.1.2 The Input Fields

This file contains input fields for various risk scenarios, liquidity horizons and risk classes, used to calculate the Expected shortfall. There should be one file per risk class and an additional file that contains all trades. The Trades/Positions input file fields are shown within the following table:

	DataSet	TradeId	RiskFactor	RiskClass	LiquidityHorizon	Currency	PnL	AsOfDate
Expected Shortfall PL Trades File	✓	✓	✓	✓	✓	✓	✓	✓

The definitions of the above fields are as follows:

Field	Field Type	Description
DataSet	Alphanumeric 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 trades, this value should be blank.
TradeId	Alphanumeric String	The trade Id
RiskFactor	Alphanumeric String	The risk factor **Note:** This is used only for non-modellable trades, and should be blank for modellable trades.
RiskClass	Alphanumeric String	The risk class, which will be one of the following: • GIRR • CSR • Equity

Field	Field Type	Description
		• Commodity • FX • Allin **Note:** For non-modellable trades, non-idiosyncratic trades, this value should be blank.
LiquidityHorizon	Integer	The Liquidity Horizon in days: 10, 20, 40, 60 or 120 **Note**: For non-modellable, non-idiosyncratic trades, this value should be blank. To ensure correct results, if a particular Liquidity Horizon is specified, then all lower Liquidity Horizons must also be included. So, for example, for Trade Id and Risk Class, if 40 is available, then 20 and 10 must be available as well.
Currency	Alphanumeric String	The currency in which the PnL vector is expressed.
PnL	Double	The PnL vector for 12 months' worth of data - there is one value per day, which needs to be computed for a liquidity horizon of 10 days in the risk engine - the values are separated by a semi-colon. This is effectively an extra 'PnL vector Liquidity Horizon' column to use as the reference into the new PnL Vector store. This new column will be copied from the existing Liquidity Horizon column for lines in the input files where PnL vectors exist. Then once the file is loaded (or transaction complete), a second pass will fill in the gaps by adding facts with missing Liquidity Horizons and existing PnL vectors. The advantage gained from this is that 'Liquidity Horizon gaps' do not need to be filled any more.
AsOfDate	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.

5.2 Risk Factors Input File Format

5.2.1 The File Pattern Match

The pattern match for the Risk Factors file is: ****/IMARiskFactors*.csv**
(see **"Note on glob"** in the Overview section)

5.2.2 The Input Fields

The Risk Factors input fields are shown within the following table:

	RiskFactor	RiskClass	NMRF	Idiosyncratic	CCY	AsOfDate
Risk Factors File	✓	✓	✓	Opt	✓	✓

The definitions/meanings of the Risk Factor input fields shown above are as follows:

Field	Field Type	Description
RiskFactor	Alphanumeric String	The risk factor – the values must be the same as in the 'RiskFactor' field of the Expected Shortfall PL file.

Field	Field Type	Description
RiskClass	Alphanumeric 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	'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	'Y' or 'N'	An optional field, indicating whether or not the Non Modellable Risk Factor is Idiosyncratic.
Ccy	Double	Currency of the Risk Factor.
AsOfDate	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.

5.3 PL Scenarios Input File Format

5.3.1 The File Pattern Match

The pattern match for the PL Scenarios Inputs File is: ****/IMA_Scenarios*.csv**
(see **"Note on glob"** in the Overview section)

5.3.2 The Input Fields

This file contains input fields indicating the various PL scenarios corresponding to the Expected Shortfall PL Trade Input file. The Scenarios input file fields are shown within the following table:

	DataSet	Index	Scenario	AsOfDate
PL Scenarios File	✓	✓	✓	✓

The definitions/ meanings of the fields shown above are as follows:

Field	Field Type	Description
DataSet	String	Exactly the same as for 'Dataset' as defined for the Trade Inputs file.
Index	Integer	The index in the vector representing the PnL – the first element has index 0.

Field	Field Type	Description
Scenario	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	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.

6. DRC Input File Formats (DRC Trade Level, DRC Non Linear Recovery Trade and Default Scenario Files)

6.1 DRC Trade Level Input File Format

This file must contain all trades subject to default risk for the purposes of SA and IMA calculations.

6.1.1 The File Pattern Match

The pattern match for the DRC Trade Level file is: ****/DRC_Trade_*.csv**
(see **"Note on glob"** in the Overview section)

6.1.2 The Input Fields

Component	AsOfDate	TradeId	RiskClass	ObligorId	ObligorCategory	InstrumentType	Seniority	Direction	Maturity	Rating	Notional	MartketValue	GrossJTD	Ccy	Tranche	Region	AssetClass	Attachment	Detachment	RecoveryRates	RecoveryValues	Component
IMA	✓	✓	Opt	✓	Opt	Opt	✓	Opt	Opt	Opt	Opt	Opt	Opt	✓	Opt	Opt	Opt	Opt	Opt	✓	✓	IMA
SA DRC non-Sec - Trade level file	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Opt	Opt	Opt	Opt								SA DRC non-Sec - Trade level file
SA DRC Sec non-CTP - Trade level file	✓	✓	✓	✓			✓	✓	✓	✓	Opt	Opt	Opt	Opt	✓	✓	✓	✓	✓	✓	✓	SA DRC Sec non-CTP - Trade level file

The definitions/meanings of the fields for the DRC Trade Level Input File shown above are as follows:

Field	Field Type	Description
AsOfDate	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.
TradeId	String	String, alphanumeric (e.g. "IR_IRSWAP_LIBOR3M", "EQ_12345677", etc.) – if coming from multiple systems may need to prepend source system to the id for uniqueness.
RiskClass	String	(optional) "DRC non-Sec" or "DRC Sec non-CTP".
ObligorId	String	ID of the Obligor.
ObligorCategory	String	(optional) Obligor Category/Bucket (BCBS 457 [MAR22.22]). Any values allowed (but should be at most 3 distinct values).
InstrumentType	String	(optional) Instrument type for LGD (BCBS 457 [MAR22.12]). "equity", "junior debt", "senior debt", or "covered bond").
Seniority	String	Seniority of the exposure (matches values in seniority description file).
Direction	String	(optional) 'long' or 'short'.
Maturity	String	(optional) Maturity of the trade (e.g. "1D", "2W", "12M", "1Y", or date "YYYY-MM-DD").
Rating	String	(optional) Credit Quality Category:

Field	Field Type	Description
		• For non-Sec, see BCBS 457 [MAR22.24] • For Sec non-CTP, see BCBS 374, paras 66-68
Notional	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.
MarketValue	Double	(optional) This is used to compute GrossJTD for Sec non-CTP when not provided. This is an optional override for the 'MarketValue' in the Trade Attributes file.
GrossJTD	String	(optional) Gross JTD value; providing this value skips the calculation (using market value and notional).
Ccy	String	Currency code for 'RecoveryValues'. Required if the 'RecoveryValues' field is provided.
Tranche	String	(optional) ID of the Tranche.
Region	String	(optional) Region for Bucket (BCBS 457 [MAR22.31](2)(b)). Values must match DRC Buckets file.
AssetClass	String	(optional) Asset class for Bucket (BCBS 457 [MAR22.31](2)(a)). Values must match DRC Buckets file.
Attachment	Double	(optional) Attachment point (Decimal values are expected).
Detachment	Double	(optional) Detachment point (Decimal values are expected).
RecoveryRates	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	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.

6.2 DRC Non Linear Recovery Trade Input File Format

6.2.1 The File Pattern Match

The pattern match for this file is: ****/DRC_NonLinear_Recovery_*.csv**
(see **"Note on glob"** in the Overview section)

6.2.2 The Input Fields

The DRC Non Linear Recovery Trade input fields are shown within the following table:

	AsOfDate	TradeId	ObligorId	Seniority	Ccy	ScenarioIds	PnL
DRC Non Linear Recovery Trades File	✓	✓	Opt	✓	✓	✓	✓

The definitions of the above fields are as follows:

Field	Field Type	Description
AsOfDate	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.
TradeId	String	Trade Identifier.
ObligorId	String	Identifier of the Obligor (optional).
Seniority	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	String	The currency of the P&L values
ScenarioIds	Vector of Integers	List of Scenario ids which include the trade as defaulting.
PnL	Vector of Double	The P&L values corresponding to the Scenario ids.

6.3 DRC Scenarios Input File Formats

6.3.1 The File Pattern Match

The pattern match for the DRC Scenarios file is: ****/DRC_LINEAR_SCENARIOS*.csv**
(see **"Note on glob"** in the Overview section)

6.3.2 The Input Fields

The DRC Scenarios input fields are shown within the following table:

	AsOfDate	ScenarioIndex	ObligorId	Seniority	ScenarioRecoveryRate	DefaultRate
DRC Scenarios File	✓	✓	✓	✓	✓	✓

The definitions of the above fields are as follows:

Field	Field Type	Description
AsOfDate	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.
ScenarioIndex	Integer	The index in the vector representing the list of Scenarios – the first element has index 0.
ObligorId	String	The identifier of the Obligor, which will match the obligor in the trade file.
Seniority	String	An indication of the Seniority level of the obligor that the recovery rates are applicable for.
ScenarioRecoveryRate	Double	A value between 0 and 1 representing the amount of the Notional recovered from the defaulted Obligor in the given scenario.
DefaultDate	Date 'YYYY-MM-DD'	Default date for the scenario.

7. 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.

7.1 PL Summary Input File Format

7.1.1 The File Pattern Match

The pattern match for the PL Summary file is: ****/PL_Summary*.csv**
(see **"Note on glob"** in the Overview section)

7.1.2 The Input Fields

The PL Summary input fields are shown within the following table:

	AsOfDate	Desk	Currency	Actual PL	Hypothetical PL	Theoretical PL	VaR99	VaR975	p-value Actual	p-value Hypothetical
PL Summary File	✓	✓	✓	✓	✓	✓	✓	✓	Opt	Opt

The definitions of the above fields are as follows:

Field	Field Type	Description
AsOfDate	Date 'YYYY-MM-DD'	The as-of date (T-1).
Desk	String	The desk ID, or "All-IMA" for company-wide.
Currency	String	The currency of P&L and VaR values.
Actual PL	Double	The Actual P&L value (for desk, as-of T-1)
Hypothetical PL	Double	The Hypothetical P&L value (for desk, as of T-1)
Theoretical PL	Double	The Risk-Theoretical P&L value (for desk, as of T-1)
VaR99	Double	VaR at 99% confidence level (for desk, as of T-1)
VaR975	Double	VaR at 97.5% confidence level (for desk, as of T-1)
p-value Actual	Double	(optional) p-value of Actual PL (for desk, as-of T-1)
p-value Hypothetical	Double	(optional) p-value of Hypothetical PL (for desk, as-of T-1)

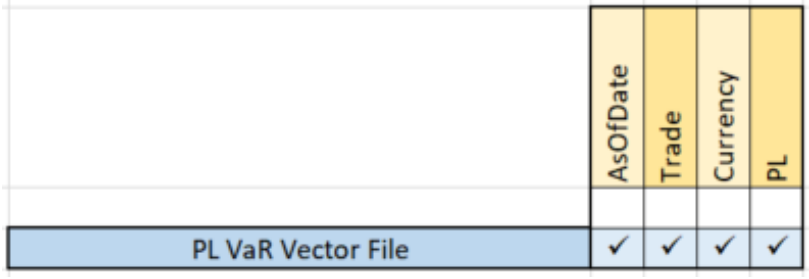
7.2 PL VaR Vector Input File Format

7.2.1 The File Pattern Match

The pattern match for the PL VaR Vector file is: ****/PL_Var_Vector*.csv**
(see **"Note on glob"** in the Overview section)

7.2.2 The Input Fields

The PL VaR Vector input fields are shown within the following table:



The definitions of the above fields are as follows:

Field	Field Type	Description
AsOfDate	Date ['YYYY-MM-DD']	The as-of date (T-1).
Trade	String	The Trade Id (or Position Id for fungible instrument)
Currency	String	The currency of VaR P&L Vector values.
PL	Vector	VaR P&L Vector values (for desk, as-of T-1).

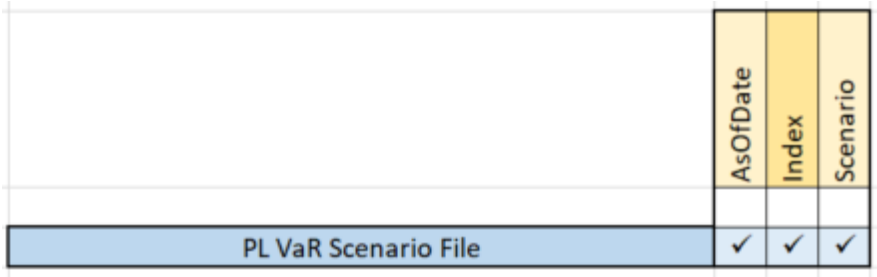
7.3 PL VaR Scenario Input File Format

7.3.1 The File Pattern Match

The pattern match for the PL Var Scenario Input File is: ****/PL_VaR_Scenario*.csv**
(see **"Note on glob"** in the Overview section)

7.3.2 The Input Fields

The PL VaR Scenario input fields are shown within the following table:



The definitions of the above fields are as follows:

Field	Field Type	Description
AsOfDate	Date 'YYYY-MM-DD'	The as-of date (T-1).
Index	Unsigned Integer	The index of the VaR scenario (within the VaR P&L vector)
Scenario	String	The name of the VaR scenario

8. Multiplier Input File Format

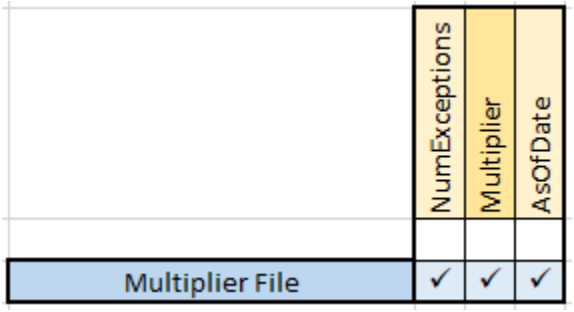
8.1 The File Pattern Match

The pattern match for the Multiplier file is: ****/Multiplier.csv**
(see **"Note on glob"** in the Overview section)

8.2 The Input Fields

This file is a configuration file storing the data defined in Table 2 in Appendix B

The Multiplier input file fields are shown within the following table:



The definitions/ meanings of the fields shown above are as follows:

Field	Field Type	Description
NumExceptions	Integer	The number of exceptions encountered in the backtesting of the bank's daily VaR.
Multiplier	Double	The multiplier used in the calculation of the aggregated charge associated with approved desks (See BCBS 457 [MAR32.9]).
AsOfDate	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.

9. IMCC and SES Input File Formats

9.1 IMA Summary Input File Format

9.1.1 The File Pattern Match

The pattern match for the IMA Summary file is: ****/IMA_*_Summary*.csv***
(see **"Note on glob"** in the Overview section)

9.1.2 The Input Fields

This file contains the IMA P&L vectors at the *Book* and *Legal Entity* levels. It has the same format as the *Expected Shortfall PL Trade* file (**IMA_Trades.csv**), except the *TradeId* field has been replaced with *Book* and *Legal Entity* fields. The same file format is used for modellable and non-modellable trades (they may even be included in the same file), however different columns are used.

The IMA Summary input file fields are shown within the following table:

	DataSet	Book	LegalEntity	RiskFactor	RiskClass	LiquidityHorizon	Currency	PL	AsOfDate
IMA Summary File (Modellable Trades)	✓	✓	✓	Opt	✓	✓	✓	✓	✓
IMA Summary File (Non-Modellable Trades)		✓	✓	✓			✓	✓	✓

One cell is marked as 'Opt' meaning Optional.

The definitions of the above fields are as follows (interpretations for 'modellable' and 'non-modellable are included in the single table shown below):

Field	Field Type	Description
DataSet	Alphanumeric 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** trades, this value should be blank.
Book	Alphanumeric String	Book

Field	Field Type	Description
LegalEntity	Alphanumeric String	Legal Entity
RiskFactor	Alphanumeric String	**Modellable Trades:** The (modellable) Risk Factor (optional). If RiskFactor is not present, the P&L vector is expected to represent all risk factors for the liquidity horizon. **Non-Modellable Trades:** The (non-modellable) Risk Factor.
RiskClass	Alphanumeric String	The risk class, which will be one of the following: • GIRR • CSR • Equity • Commodity • FX • Allin **Note:** For **non-modellable** trades, non-idiosyncratic trades, this value should be blank.
LiquidityHorizon	Unsigned Integer	The Liquidity Horizon in days: 10, 20, 40, 60 or 120 To ensure correct results, if a particular Liquidity Horizon is specified, then all lower Liquidity Horizons must also be included. So, for example, for Trade Id and Risk Class, if 40 is available, then 20 and 10 must be available as well. **Note:** For **non-modellable** trades, this value should be blank.
Currency	Alphanumeric String	The currency in which the PnL vector is expressed.
PL	Double Vector	The PnL vector for 12 months' worth of data - there is one value per day, which needs to be computed for a liquidity horizon of 10 days in the risk engine - the values are separated by semi-colons.
AsOfDate	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.

9.2 Risk Factors Input File Format

9.2.1 The File Pattern Match

The pattern match for the Risk Factors file is: ****/IMARiskFactors*.csv**
(see **"Note on glob"** in the Overview section)

9.2.2 The Input Fields

The Risk Factors input fields are shown within the following table:

	RiskFactor	RiskClass	NMRF	Idiosyncratic	CCY	AsOfDate
Risk Factors File	✓	✓	✓	Opt	✓	✓

The definitions/meanings of the Risk Factor input fields shown above are as follows:

Field	Field Type	Description
RiskFactor	Alphanumeric String	The risk factor – the values must be the same as in the 'RiskFactor' field of the Expected Shortfall PL file.
RiskClass	Alphanumeric String	The risk class, which will be one of the following: • GIRR • CSR • Equity • Commodity • FX • Allin **Note:** Currently, only NMRF should be included in the Risk Factors file, so RiskClass should always be blank.
NMRF	'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	'Y' or 'N'	An optional field, indicating whether or not the Non Modellable Risk Factor is Idiosyncratic.
Ccy	Double	Currency of the Risk Factor.
AsOfDate	Date 'YYYY-MM-DD'	Timestamp (at close of business) for the data.

End of Document