

Fundamental Review of the Trading Book

OVERVIEW & IMPLEMENTATION NOTES

FEBRUARY 2016

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Introduction

- May 2012
Consultation started :
Fundamental Review of the Trading Book (FRTB)
- January 2016
Final standards published :
Minimum Capital Requirements for Market Risk
- Implementation timetable
- 1 January 2019
Deadline for national supervisors to implement under domestic legislation.
- 31 December 2019
Deadline for regulatory reporting by banks using the revised market risk framework.

Key Points

- ✓ A **clearer, more objective boundary** between the trading book and banking book to reduce incentives for regulatory arbitrage.
- ✓ A **revised risk measurement approach and calibration** to better capture tail risk, liquidity risk and periods of significant financial stress.
- ✓ A **revised standardised approach** to provide a simple but sufficiently risk-sensitive alternative to internal models.
- ✓ A **revised internal models-based approach** with more rigorous model approval and better capitalisation of material risk factors.
- ✓ More complex internal models approach requires **up to 30x more data storage and processing capacity** than existing Basel capital calculations.

Standardised Approach (SA)

Must be calculated by all banks and reported monthly (and as requested by the supervisor).

$$\text{SA Capital Charge (CC)} = \text{Sensitivities-based CC} + \text{Default Risk Charge} + \text{Residual Risk Add-On}$$

Sensitivities-based Capital Charge
(Details on next slide)

Default Risk Charge (DRC)
Banking book-based treatment of default risk, adjusted to take into account more hedging effects.

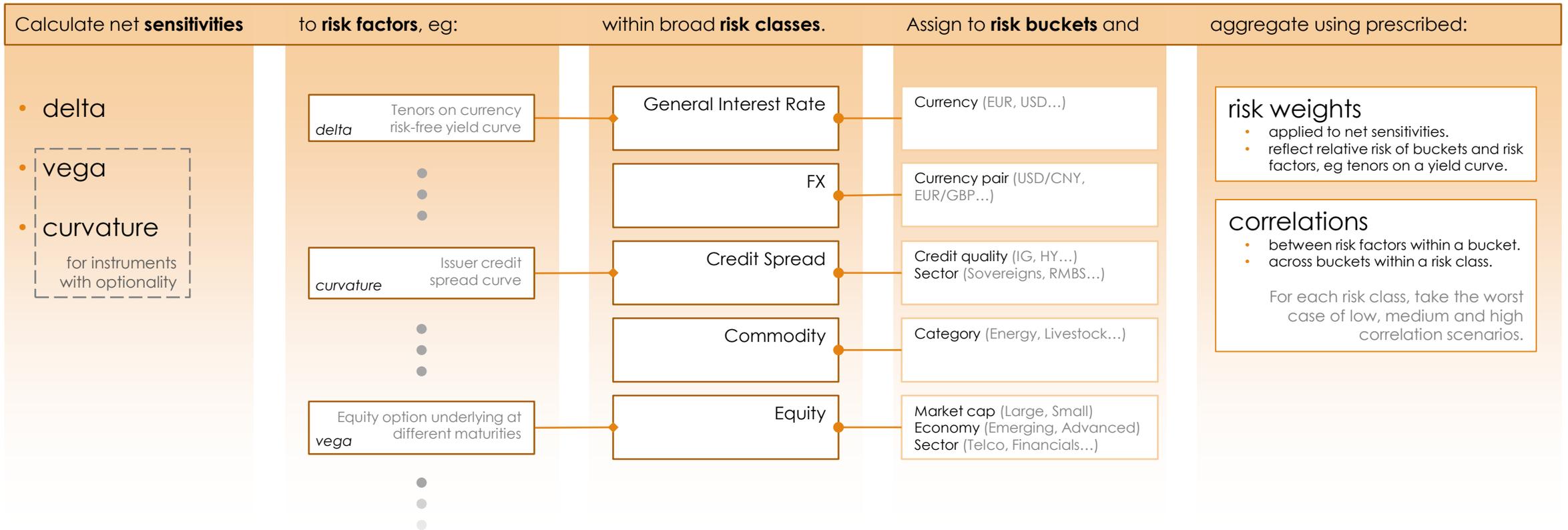
Based on Jump to Default (JTD) calculation.

Residual Risk Add-On (RRAO)
Includes any risk that would otherwise not be capitalised under the proposed SA, such as behavioural risk or exotic underlying risk.

Simple sum of gross notional amount of instruments bearing residual risks, multiplied by a risk weight of:

- 1.0% for instruments with an exotic underlying.
- 0.1% for instruments bearing other residual risks.

SA: Sensitivities-based Capital Charge



Internal Models Approach (IMA)

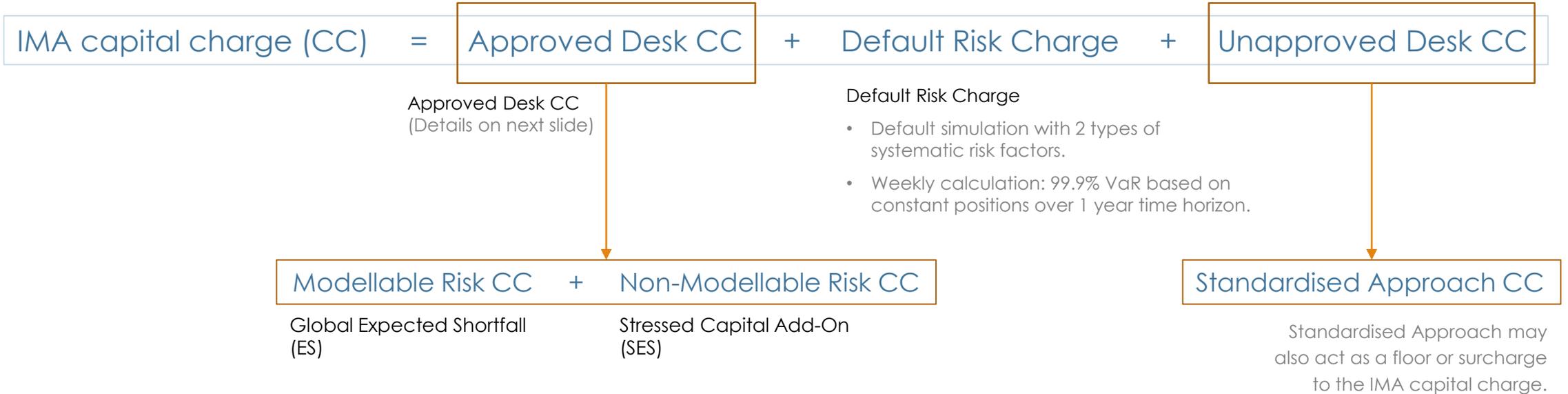
Computed on a daily basis firm-wide and at trading desk level.

Firm-wide requirements on models, stress testing and risk management processes.

Approvals at individual trading desk level based on:

- Assessment of model performance.
- Clear thresholds for breaches of backtesting and P&L attribution procedures.

All securitised products are ineligible for inclusion in the internal models-based capital charge and must be capitalised using the standardised approach.



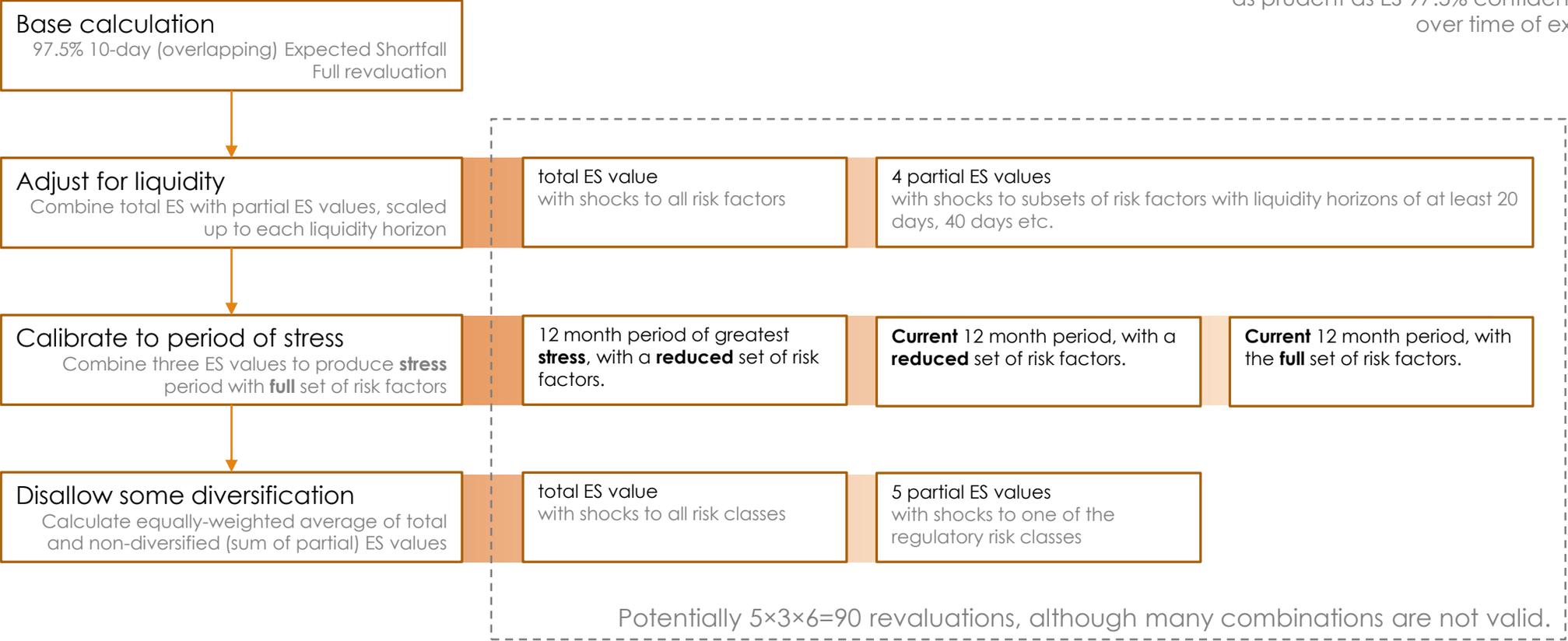
IMA: Approved Desk Capital Charge

Modellable Risk Global Expected Shortfall (ES)

Capital Charge (CC) is floored at a multiple of the 60-day average CC
Multiplier for ES varies between 1.5 and 2 depending on backtesting performance.

Non-Modellable Risk Stressed Capital Add-On (SES)

Capitalised with stress scenario that is at least as prudent as ES 97.5% confidence threshold over time of extreme stress.



IMA: Scope and Scale

Comparison of computing resources against existing Basel II.5 regulation, based on example portfolio with 100,000 positions.

	FRTB framework Jan 2016	Revised Basel II framework Dec 2010
Positions	100,000 Including equity, commodity, FX, interest rate and credit instruments, and their derivatives.	
Market risk measure	Expected Shortfall (daily)	Value at Risk (daily) Stressed Value at Risk (weekly)
Risk factor combinations	~20 valid combinations of liquidity horizon and risk class Only a fraction of these will apply to each individual position, so there is scope to improve efficiency by eliminating redundant valuations.	1 Only a <i>total</i> scenario (all factors shifted) is required.
Scenarios	250 ES 1 year time horizon. 3 sets of scenarios to calibrate to a period of stress Two of the sets of scenarios use a reduced set of risk factors, so will produce fewer than the 20 valid combinations listed above. If there is 10 years of history for the full set of risk factors, it may be possible to use a single set of scenarios, effectively applying the full set of risk factors to the stress period directly.	500 VaR 2 year time horizon. 500 Stressed VaR 1 year time horizon with antithetical scenarios.
Total scenario valuations	100,000 x 20 x 3 x 250 = 1,500,000,000 (daily) Full revaluations	100,000 x 1 x 500 = 50,000,000 (daily) 100,000 x 1 x 500 = 50,000,000 (weekly)
Data volume (monthly) Based on one result using 20 bytes	~600GB	~25GB

~30x more data & compute

Capital Impact

Comparing the two approaches in the revised framework for non-securitisations:

At the **25th percentile**, SA produces a **10% lower** capital charge than IMA.

For the **median bank**, standardised approach produces a **40% higher** total capital charge compared to internal models.

At the **75th percentile**, SA produces a **200% higher** capital charge than IMA.

Compared to current framework, revised framework shows an approximate:

22% increase in median total market risk capital requirement.

40% increase in weighted average capital requirement.

Overall market risk capital charge contributions:

72% non-securitisation exposures.

23% non-CTP securitisation exposures.

5% correlation trading portfolio (CTP) securitisation exposures.

Final calibration produces *lower overall capital requirement* than earlier versions of the framework.

Analysis based on end-June 2015 data in the BIS document "Explanatory note on the revised minimum capital requirements for market risk"

Technical Requirements

		Standardised Approach	Internal Models Approach
Data Gathering	Positions	Drive all capital calculations. Notionals and market values feed into other calculations, eg default risk and residual risk.	
	Instrument risk factor sensitivities	Used for sensitivities-based method.	Determine applicable liquidity horizons.
	Instrument metadata (eg sector, credit quality, currency)	<ul style="list-style-type: none"> Used for bucketing to determine risk weights and correlations. Used to determine risk weighting in DRC. Used to identify instruments with residual risks for RRAO. 	<ul style="list-style-type: none"> Used for proxying risk factors, eg to a sector index. Useful for reporting.
	Actual & hypothetical P&L	✘	Used for backtesting to support model approval.
	Historical market data	✘	<ul style="list-style-type: none"> Time series for ES and VaR (for backtesting). Historical stress scenarios. Correlations, PDs and LGDs for default risk charge.
Pricing analytics		Risk factor sensitivities (PV01, CS01 etc).	<ul style="list-style-type: none"> Pricing stress and ES/VaR scenarios. Scalability/flexibility to handle multiple revaluations with subsets of risk factors.
Other analytics		Calculation of sensitivities-based capital charge, DRC and RRAO.	<ul style="list-style-type: none"> Aggregation of ES values. Default simulation for default risk charge.
Reporting		Enhanced reporting requirements at desk level, including daily/intraday limit reports (exposures, breaches and follow-up action).	
		Monthly reporting of SA capital charge.	Weekly P&L reports and internal/regulatory risk measure reports (VaR/ES, backtesting).

Implementation Notes

- ✓ Be proactive, not reactive - requirements will change, new regulations will be added.
 - eg FRTB-CVA for counterparty credit risk
- ✓ Look at enterprise-wide risk.
 - Siloed solutions no longer work
- ✓ Design to reuse infrastructure for Standardised and Internal Models approaches.
- ✓ Aim for consistent interfaces to disparate systems.
 - Front Office position feeds
 - Pricing analytics
 - Historical market data
- ✓ Use a single pricing engine across front office and risk management to avoid extra model validation.
- ✓ Automate data gathering and cleaning.
 - Improve data quality
 - Free up risk managers from manual work
- ✓ Improve reporting to help Risk Management.
 - Trace sources of risk from capital charge back to positions and market data
 - Drill down to desk level and to individual positions, across all business lines



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Percentile provides software for integrated and holistic risk management in capital markets, to deliver faster regulatory compliance and reduce operational risk while lowering costs.

