Fundamental Review of the Trading Book (FRTB)

http://www.bis.org/bcbs/publ/d352.pdf

Arnaud Sandrin

Symposium

London, November 23rd, 2016

Any views expressed in this presentation are those of the author only, and not those of *Autorité de Contrôle Prudentiel et de Résolution* nor *Banque de France*.

Contents

Milestones

- Beginning of the FRTB: 2009
- Three consultative documents: 2012, 2013, 2014
- Publication of the final standards: 14 January 2016
- Transposition in the national rules: 1 January 2019
- First reporting date: 31 December 2019
- FAQs are being developed

Boundary trading book / banking book

- Definition of the boundary on an instrument basis
- Trading-intent
- Presumptive lists
  - Accounting trading asset or liability → trading book
  - Market-making → trading book
  - Real estate holdings → banking book (eg)
- Switching limits
- Capital arbitrage mitigation
- Supervisory re-designation
- Daily fair-valuation required for trading book
- Better reporting

Internal Models Approach

- 97.5% Expected Shortfall (ES) – tail risk
- Single, stressed measure – procyclicality
- Varying liquidity horizons
- Constrained diversification effects
- Validation at desk level
  - Backtesting
  - P&L Attribution
- Risk factor modellability
- Default risk charge

Standardised Approach

- Sensitivities-based Method
  - Delta, vega, curvature (≈ stress test on non-linear risks)
  - Prescribed risk weights and correlations
- Residual Risks Add-on
  - 1,0% exotic
  - 0.1% other residual risks
- Default Risk Charge
- Securitisation
- Correlation Trading Portfolio (CTP)

Contents

P&L Attribution: requirements

- Comparison between two P&Ls

  RT: risk-theoretical P&L

  H: hypothetical P&L

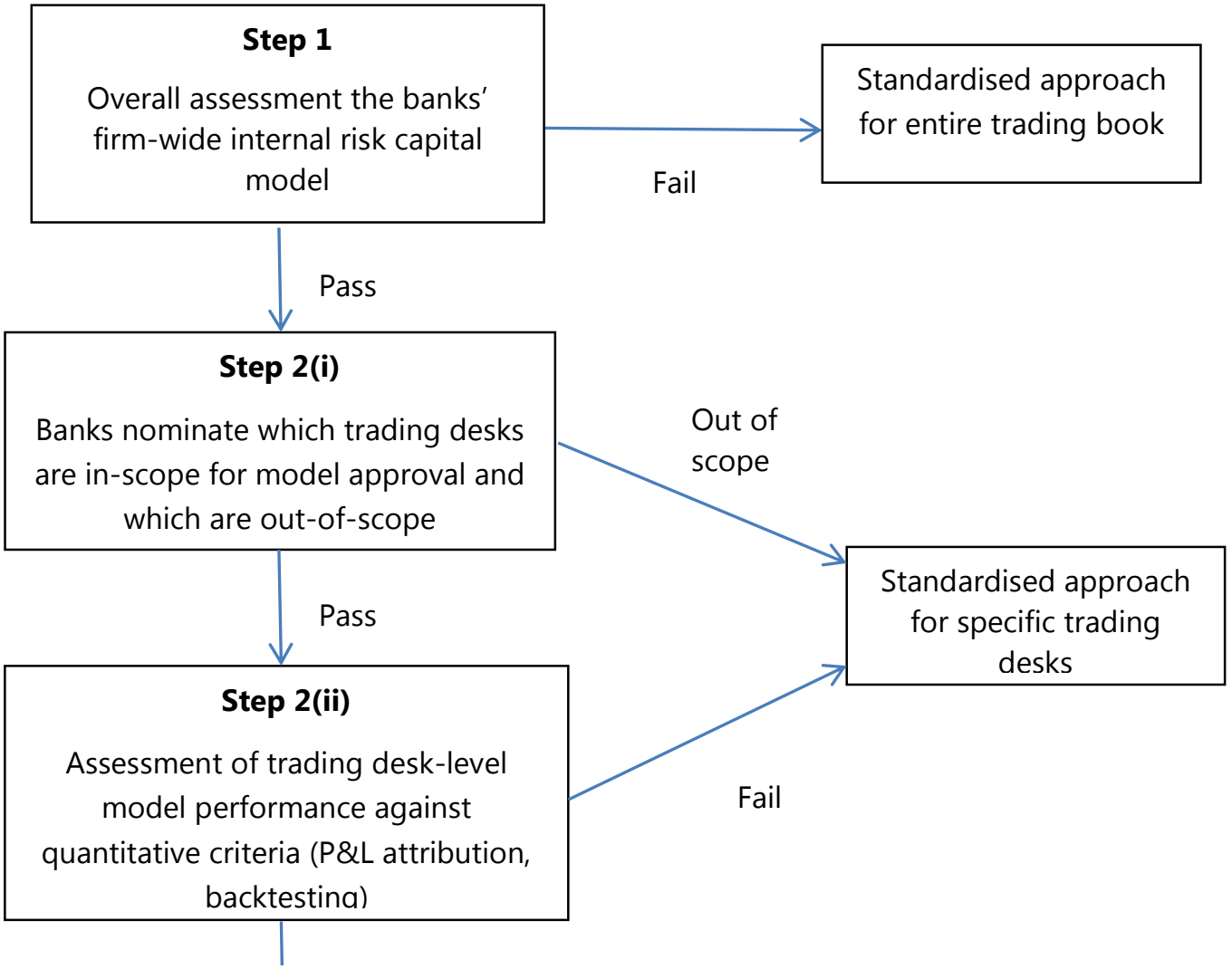
- First ratio

$$-10\% < \frac{\mu_{(RT-H)}}{\sigma_H} < 10\%$$

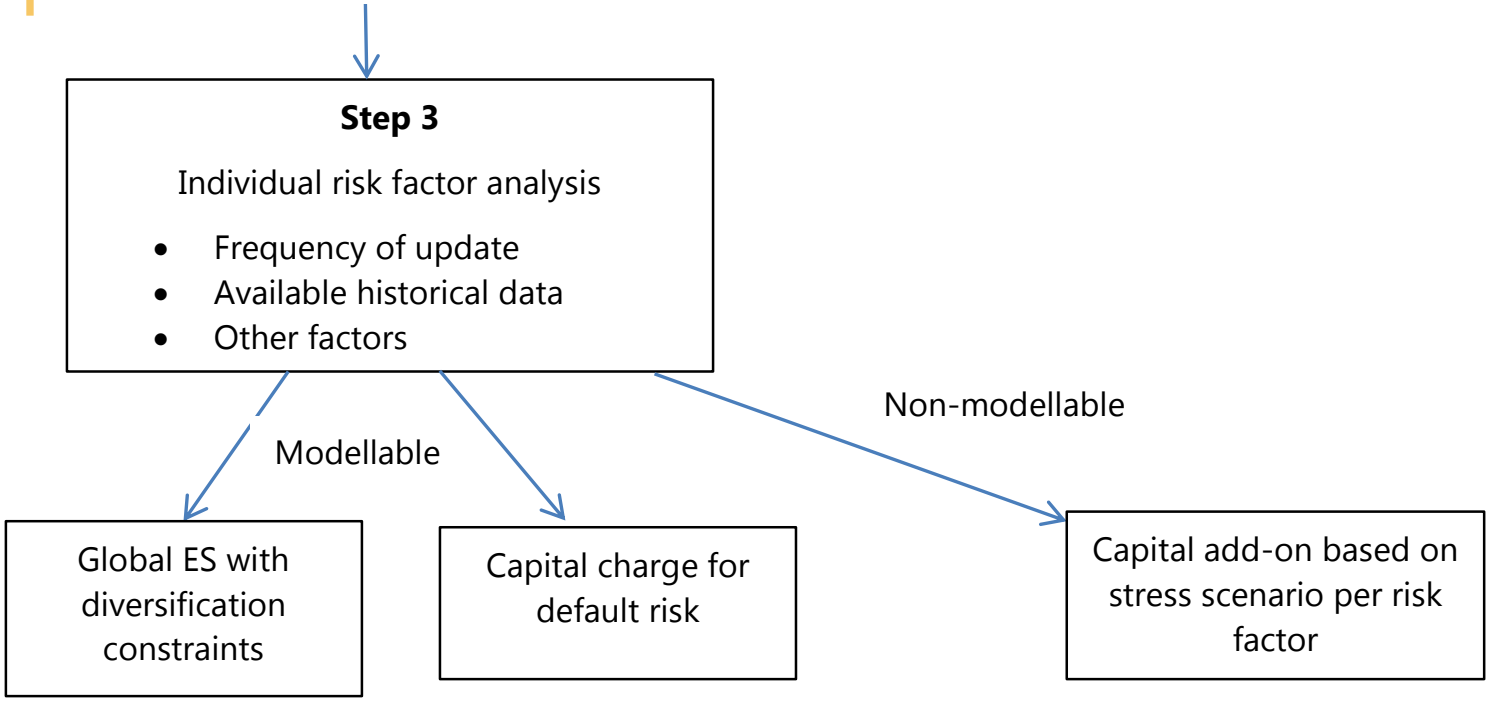
- Second ratio

$$\frac{{\sigma^2}_{(RT-H)}}{{\sigma^2}_H} < 20\%$$

P&L Attribution and model validation (1/2)



P&L Attribution and model validation (1/2)



"For a risk factor to be classified as modellable by a bank, there must be continuously available "real" prices for a sufficient set of representative transactions. A price will be considered "real" if:

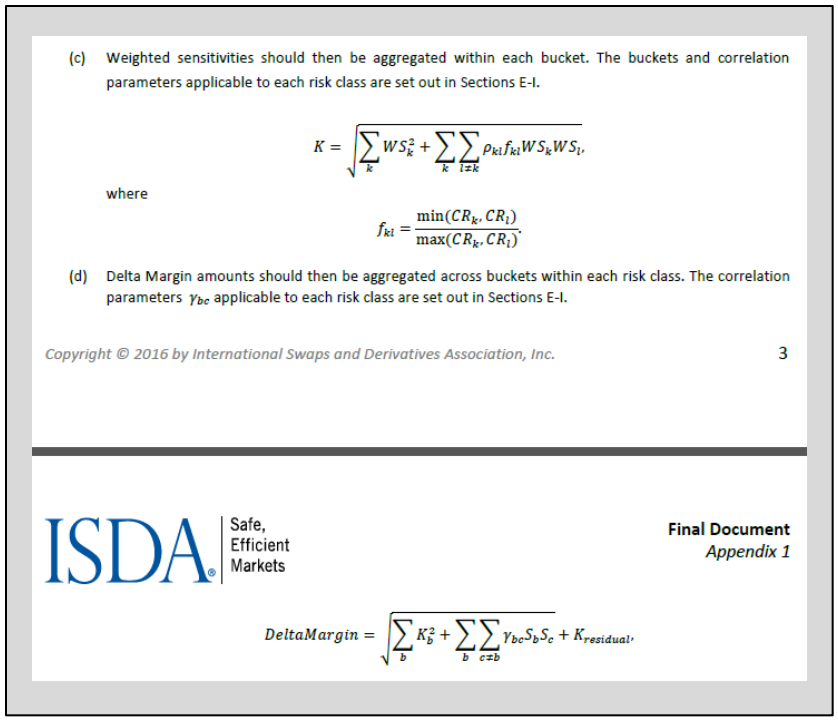
- *It is a price at which the institution has conducted a transaction;*
- *It is a verifiable price for an actual transaction between other arms-length parties; or*
- *The price is obtained from a committed quote.*
- *If the price is obtained from a third-party vendor, where: (i) the transaction has been processed through the vendor; (ii) the vendor agrees to provide evidence of the transaction to supervisors upon request; and (iii) the price meets the three criteria immediately listed above, then it is considered to be real for the purposes of the modellable classification."*

Source: Extract from FRTB, §183(c)

Contents

SIMM and SbM

- Two similar approaches



(c) Weighted sensitivities should then be aggregated within each bucket. The buckets and correlation parameters applicable to each risk class are set out in Sections E-I.

$$K = \sqrt{\sum_k WS_k^2 + \sum_k \sum_{l \neq k} \rho_{kl} f_{kl} WS_k WS_l},$$

where

$$f_{kl} = \frac{\min(CR_k, CR_l)}{\max(CR_k, CR_l)}.$$

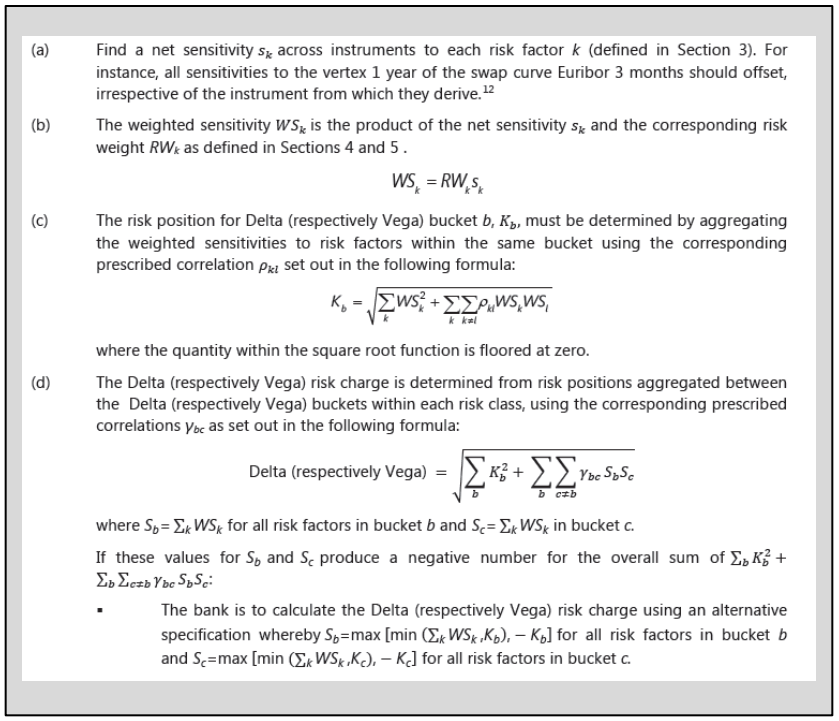
(d) Delta Margin amounts should then be aggregated across buckets within each risk class. The correlation parameters γ_{bc} applicable to each risk class are set out in Sections E-I.

ISDA Safe, Efficient Markets

Final Document
Appendix 1

$$DeltaMargin = \sqrt{\sum_b K_b^2 + \sum_b \sum_{c \neq b} \gamma_{bc} S_b S_c} + K_{residual},$$

Source: Extract from SIMM, §9
Link:
http://www2.isda.org/attachment/ODY2OA==/ISDA_SIMM_vR1.0_(PUBLIC).pdf



(a) Find a net sensitivity s_k across instruments to each risk factor k (defined in Section 3). For instance, all sensitivities to the vertex 1 year of the swap curve Euribor 3 months should offset, irrespective of the instrument from which they derive.[12]

(b) The weighted sensitivity WS_k is the product of the net sensitivity s_k and the corresponding risk weight RW_k as defined in Sections 4 and 5 .

$$WS_k = RW_k s_k$$

(c) The risk position for Delta (respectively Vega) bucket b, K_b, must be determined by aggregating the weighted sensitivities to risk factors within the same bucket using the corresponding prescribed correlation ρ_{kl} set out in the following formula:

$$K_b = \sqrt{\sum_k WS_k^2 + \sum_k \sum_{k \neq l} \rho_{kl} WS_k WS_l}$$

where the quantity within the square root function is floored at zero.

(d) The Delta (respectively Vega) risk charge is determined from risk positions aggregated between the Delta (respectively Vega) buckets within each risk class, using the corresponding prescribed correlations γ_{bc} as set out in the following formula:

$$\text{Delta (respectively Vega)} = \sqrt{\sum_b K_b^2 + \sum_b \sum_{c \neq b} \gamma_{bc} S_b S_c}$$

where $S_b = \sum_k WS_k$ for all risk factors in bucket b and $S_c = \sum_k WS_k$ in bucket c.

If these values for S_b and S_c produce a negative number for the overall sum of $\sum_b K_b^2 + \sum_b \sum_{c \neq b} \gamma_{bc} S_b S_c$:

- The bank is to calculate the Delta (respectively Vega) risk charge using an alternative specification whereby $S_b = \max[\min(\sum_k WS_k, K_b), -K_b]$ for all risk factors in bucket b and $S_c = \max[\min(\sum_k WS_k, K_c), -K_c]$ for all risk factors in bucket c.

Source: Extract from FRTB, §51

ACPR BANQUE DE FRANCE

Opportunities and challenges

- Opportunities
  - A unique global market risk measure
  - Standardisation of sensitivities
  - Standardisation of model inputs (common definitions)
- Challenges
  - Model risk
  - Global supervision / governance of SIMM and SbM

Many thanks for your attention