

Finance & Risk Services

Basel 3 - Risk & Supervision 2014

Fundamental Review of the Trading Book
The new market risk approach:
implications for banks

Rome, June 16th, 2014

A large, teal-colored chevron graphic pointing to the right, positioned on the right side of the slide.

High performance. Delivered.

Agenda

- **Introduction**
- Trading book / banking book boundary
- Revised standardized approach
- Revised internal models-based approach
- What's next?

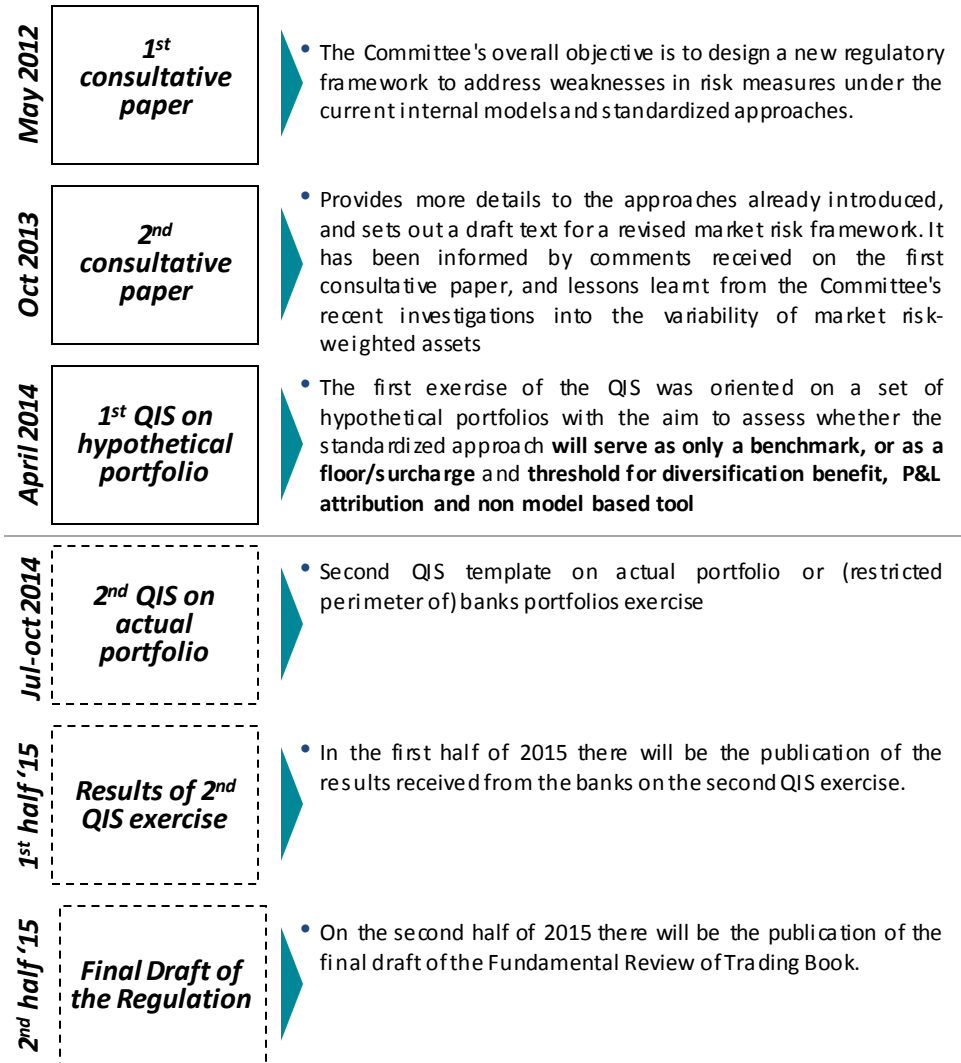
Fundamental review of trading book – a revised market risk framework (1/2)

Introduction

> The Basel Committee on Banking Supervision (“the Committee”), evaluating the high impacts of the recent financial crisis on the market risk framework, has considered that the **level of capital requirements on trading book activities was proved as being inadequate to face the losses that might spring up from a situation of stressed markets environment** (also after the first revision of the market risk regulation set out with Basel 2.5 package).

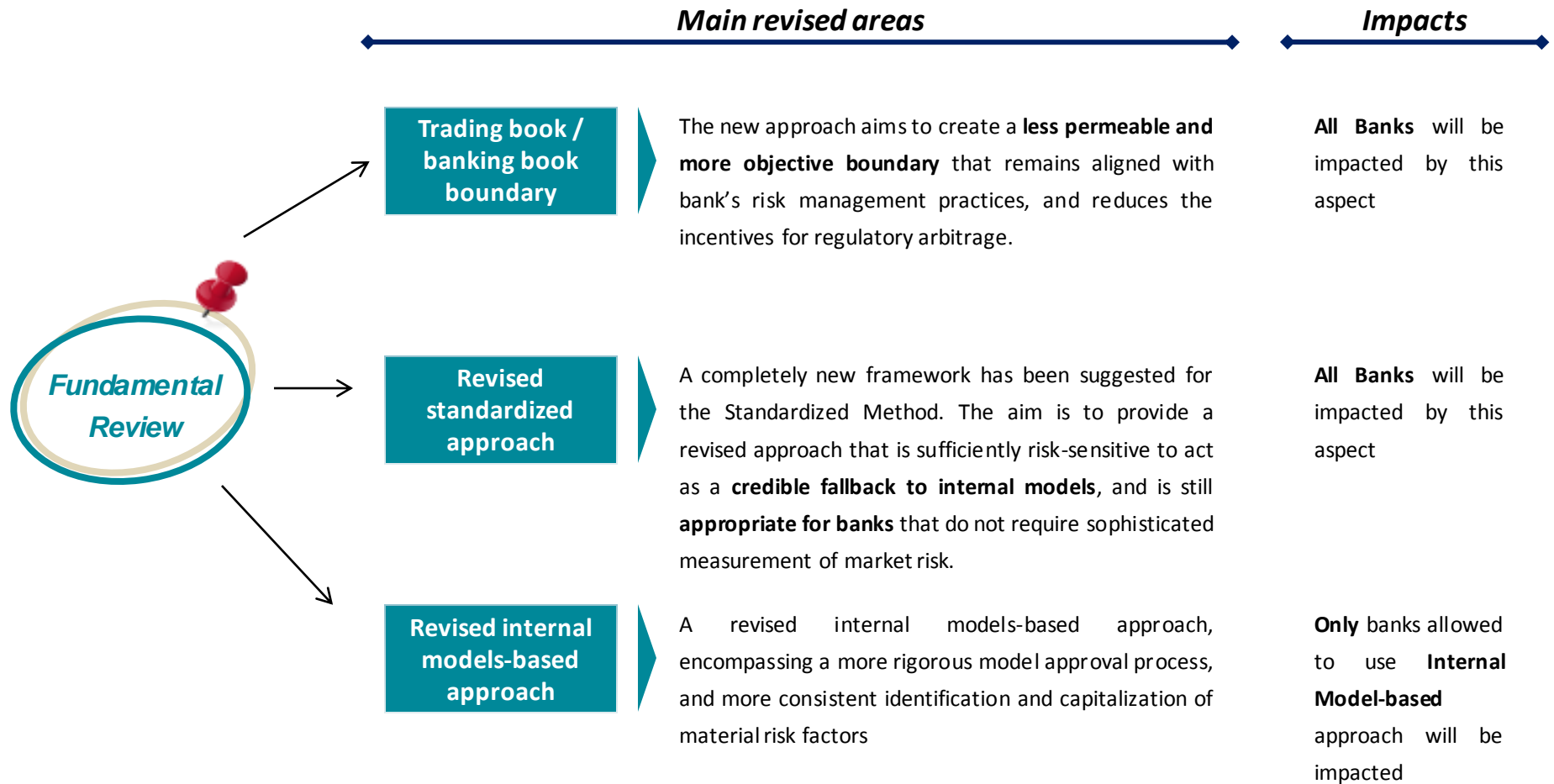
> The Committee, in response to the weakness arisen among the markets in the recent past, has focused its attention on a full review of the regulatory framework with the aim to:

- **strengthen the capital standards for market risk**
- achieving a regulatory framework that can be implemented consistently by supervisors across jurisdiction



Fundamental review of trading book – a revised market risk framework (2/2)

The most significant changes introduced by the FRTB



Agenda

- Introduction
- **Trading book / banking book boundary**
- Revised standardized approach
- Revised internal models-based approach
- What's next?

Trading book / banking book boundary (1/2)

The new discipline

Area

Current Framework

Fundamental Review Framework

Boundary redefinition

- The boundary was dependent on **bank's self-determined** and undefined intent to hold for short term resale or to benefit from short term price movements or to lock in arbitrage profits.
- **No guidance on trading book** contents and **almost no guidance** on the contents of the **banking book**

- "Covered" instruments: financial instruments and commodities that meet **specified criteria** (e.g. "any instrument which is managed on a trading desk") or valuation requirements and other explicit criteria defined by the Committee.
- Boundary definition augmented with **presumptive list** of instruments presumed to be **in the trading book** (e.g. Listed Equity, Options, ...) and description of instruments that do not meet the definition of the trading book.

Measures to reduce arbitrage

- The **boundary** was **permeable** since the switching of instrument is allowed
- No relevance of the Capital arbitrage mitigation (switching allowed)

- **Strict limit on switching instruments** after initial designation, allowable only in exceptional circumstances and subject to supervisory approval.
- If the capital charge on an instrument/portfolio is reduced as a result of switching, **the difference in charges is imposed on the bank as a fixed**, additional disclosed Pillar 1 capital charge.

Measures to strengthen Supervisory police

- No relevance of policies / procedures definition (bank self determination of boundary)
- No relevance of the supervisory re-designation (bank self determination of boundary)

- Clear definition of policies for trading book (trading strategies, active management of position,..). In addition, clear definition of policies to manage deviations from defined processes
- **Supervisor may initiate change from trading book to banking book or vice versa if asset is deemed to be improperly designated**

Trading book / banking book boundary (2/2)

Issues raised by financial services industry

General criteria principles

The general criteria which states that “any instrument which is managed on a trading desk shall be included in the trading book” lead to a potential criticality. In fact the **hedging items should be included in the same book of the instrument hedged even if they are not eligible for it**. The different treatment of hedging and hedged instrument could lead to a potential inconsistency of the Capital Charge calculation. Banks expect an higher flexibility in managing hedging instruments

Presumptive list principles

The presumptive list could be considered too restrictive for specific instruments: in **example equity investment on funds or strategic investments on listed equities**, which **could also be included in LCR ratio**, should be considered on banking book even if the general criteria allocate them on trading book. Banks, furthermore, could have **participations on market infrastructures (e.g. central counterparties)** which should be included on banking book.

Validation process

The process of validation required by the Regulator to move an asset class from a book to another could be too rigid and limit the strategic decisions of investments of the banks. The players expect a **notification process instead of a validation** one.

Agenda

- Introduction
- Trading book / banking book boundary
- **Revised standardized approach**
- Revised internal models-based approach
- What's next?

Revised standardised approach (1/2)

Summary of new proposal changes

- The Committee has identified a number of important shortcomings with the current standardised approach: a **lack of risk sensitivity, limited recognition of hedging** and diversification benefits and an **inability to sufficiently capture risks** associated with more complex instruments
- The Revised Standardised Approach (RSA) has **3 main objectives**: suitability for **non sophisticated Bank**, credible **fall-back for inadequate internal model**, including to potentially be used as a surcharge or floor to an internal models based charge and **consistent and comparable reporting** of market risk across banks

On the October 2013 paper GIRR and CSR risks were calculated by the **DCF vertex method**. After the 2014 first consultations, also **Sensitivities Based Approach** has been included to verify its feasibility.

The New Framework

Risk Typologies

General Interest Rate Risk

Credit Spread Risk

Equity Risk

Commodity Risk

Foreign Exchange Risk

Options non-delta Risk

Default Risk

Data required

- Sensitivity by time bucket or Cash Flow structure
- IR Curves
- ...
- Sensitivity or Cash Flow structure
- Credit Quality/Tranche Grade
- Issuer Sector
- ...
- Net exposure on each single issuer
- Issuer Size (Large/Small)
- Issuer Region (e.g. emerging market)
- Issuer Sector
- ...
- Market Exposure
- Commodity type
- Maturity
- ...
- Net exposure in each currency
- ...
- Option's sensitivities
- Underlying typology
- Each specific risk information required
- ...
- Notional
- Loss Given Default (LGD)
- Credit quality/tranche of the underlying
- ...

Hedging & Diversification

- *New formulas have been included to recognize hedging and diversification effects among different maturities / bucket and currencies for all the Risk Factors.*
- *Risk weight buckets and correlation matrixes are provided for each risk to determine the factors to be included in the formulas, basing on the specific details and classifications*

Revised standardised approach (2/2)

Key requirements and main impacts

- The new approach is likely to have profound implications for the operations and infrastructure of banks. The requirements and **potential impacts** identified have been described and classified in the table below with reference to both a **large bank** or **small/medium bank**. The banks should conduct their own analysis in order to understand the impact for their business.

Area	Key requirements	Main impacts
Governance and Policies	<ul style="list-style-type: none"> Harmonize Governance and Policies defined by Bank with the model change 	<ul style="list-style-type: none"> Review internal policies in order to provide transparency and clarity about the new approach
Process & Control	<ul style="list-style-type: none"> Harmonize Process and Control defined by Bank with the model change 	<ul style="list-style-type: none"> Review process and control guidelines in order to manage the new approach considering also the reconciliation activity
Data Management	<ul style="list-style-type: none"> Increase the set of data required for each risk typology (e.g. only FX Risk has been simplified) with reference to instrument classification and calculation 	<ul style="list-style-type: none"> Volume of data flows (e.g. Risk sensitivities or Cash Flows Structure for GIRR; sector, region and capitalization of each equity name; LGD for Default Risk) to be sourced and stored
Methodology	<ul style="list-style-type: none"> Change in computation logics with reference to each risk typology Standardised capital charges to be disclosed at the desk level and to be used as floor for IMA 	<ul style="list-style-type: none"> Risk modelling review in order to cover each risk typologies Computation logic to be performed at desk level to consider the parallel system
Systems and Infrastructure	<ul style="list-style-type: none"> Data management and methodology improvements require a proper infrastructure Transparent, consistent and comparable reporting across banks 	<ul style="list-style-type: none"> Systems upgrade across the range of systems used to get the required data, to review the risk modelling and to manage the parallel run New common standard reporting compliance

Agenda

- Introduction
- Trading book / banking book boundary
- Revised standardized approach
- **Revised internal models-based approach**
- What's next?

Revised internal models-based approach (1/3)

Risk measurement approach and calibration

Area	Key requirements	Issues raised by financial services industry
Moving to expected shortfall	<ul style="list-style-type: none"> Based on a confidence level of 97,5% Calibrated with a reduced set of risk factors to a period of significant financial stress $IMCC(C) = ES_{Stressed\ Reduced} \cdot ES_{Current\ Full} / ES_{Current\ Reduced}$	<ul style="list-style-type: none"> Significant computational burden and implementation effort considering: <ul style="list-style-type: none"> Multiple ES calculated on a daily basis A Calibration process based on observation that must go back to 2005 and monthly recalibrated The focus on the reduced set of risk factors could lead to select risk factors on the basis of the availability of the prices than of the real portfolio risk profile
Incorporating the risk of market illiquidity	<ul style="list-style-type: none"> Risk factors grouped into 24 separate categories Risk factors categories assigned to five generic liquidity horizon (LH) categories (from 10 days to 250 days) Shocks generated considering movements in the risk factors prices in a period equal to the assigned LH (Overlapping returns are allowed) 	<ul style="list-style-type: none"> Market illiquidity is already taken into account through a number of provisions of the new framework therefore The complexity added by the LH seems questionable considering also the prudent valuation framework that requires FVA-AVA for the market illiquidity Mismatching between regulatory LH and risk horizons defined by the trade ;Varying LH applied to different risk factors related to the same instrument Overlapping returns for the computation would lead to calibrate ES based on dependent data . Significant implementation effort to apply shocks to risk factors accordingly with new liquidity horizon
Constrain diversification effect	<ul style="list-style-type: none"> Averaging the firm-wide ES charge with a simple sum of the partial ES charges for broad risk classes (IR, FX, Equity, Com and Credits) $IMCC_{Total} = \rho(IMCC(C)) + (1 - \rho) \left(\sum_{i=1}^{nAC} IMCC(C_i) \right)$	<ul style="list-style-type: none"> Some Banks are requiring to differentiate ρ accordingly with the completeness of the IMA developed by each Bank

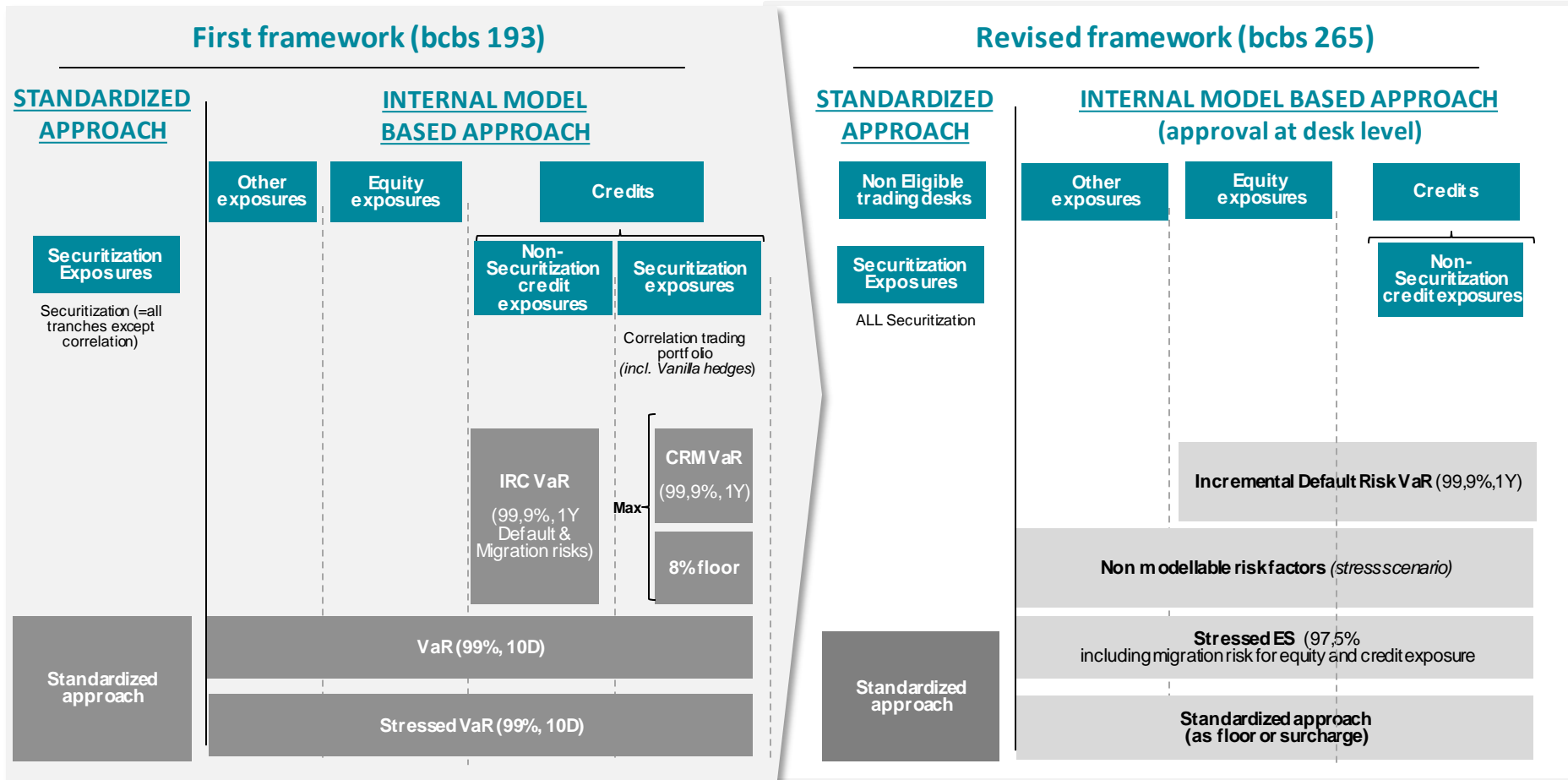
Revised internal models-based approach (2/3)

Scope changes and new approval process

Area	Key requirements	Issues raised by financial services industry
New approval process at desk level	<ul style="list-style-type: none">▪ Identification of eligible trading desk<ul style="list-style-type: none">▪ P&L attribution analysis,▪ Backtesting (based on VaR),▪ Model-independent risk tool (Capital/Exposure measure)▪ Standardized approach for non-eligible trading desk▪ Identification of modellable risk factors (availability of historical data, frequency of observation), etc)▪ Capital add-on based on stress scenario per non-modellable risk factor	<ul style="list-style-type: none">▪ Model independent tool is not a risk sensitive measure therefore can't be a proxy of the desk's market risk▪ Too many risk factors would be considered non Modellable based on rigid requirement: risk to have a misalignment between regulatory capital requirement and economic risks in the exposures
Credit risk treatment	<ul style="list-style-type: none">▪ All securitization positions excluded by the IMA (CTP included)▪ For non securitization:<ul style="list-style-type: none">▪ Migration risk incorporated into the ES framework▪ Incremental default risk (IDR) capitalized as additional charge	<ul style="list-style-type: none">▪ Significant change to the current IRC and CRM framework negating significant investment made by banks▪ Not clear definition of the IDR perimeter and calculation model to be applied▪ "Mandatory inclusion of equity in IDR has not a clear rationale" (Source: ISDA)
Disclosure requirements	<ul style="list-style-type: none">▪ Pillar III disclosure at the desk level of both IMA and SA	<ul style="list-style-type: none">▪ Concentrate the attention of financial community on the SA reducing as consequence banks' incentives to continue to develop and refine internal models

Revised internal models-based approach (3/3)

Summary of new proposal changes

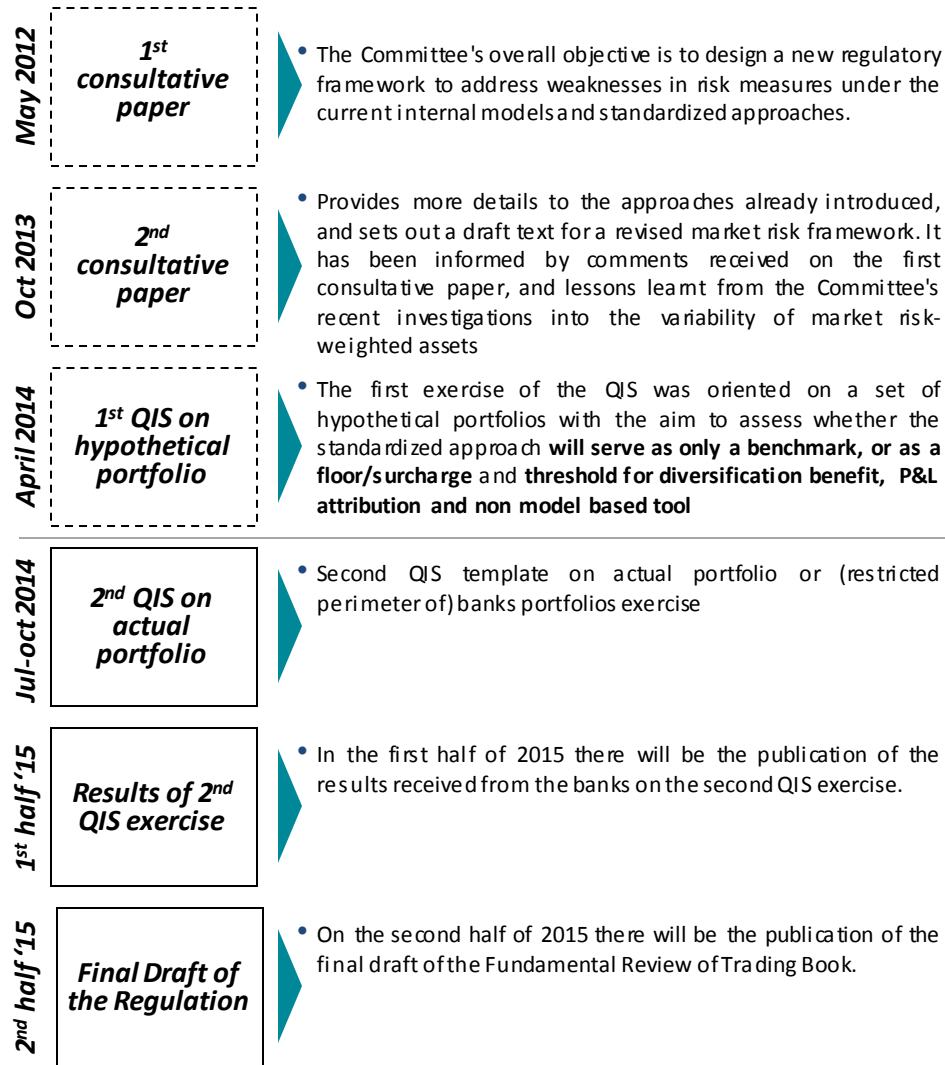


Agenda

- Introduction
- Trading book / banking book boundary
- Revised standardized approach
- Revised internal models-based approach
- **What's next?**

Fundamental review of trading book – a revised market risk framework

What's next



Due to the concerns and the points of attention described We think that the **proposed timeline will be reviewed** and integrated with an additional QIS.

Extract from January 6th ISDA letter to the Banking Committee On Banking Supervision:

“We believe that the fundamental changes that the FRTB aims to introduce **require an iterative process** to ensure that the right and intended outcome is achieved;

The planned QIS **timeline** for the proposed Standardized Approach (SA) is **inadequate**, given the significant work required to build functionality to run calculations within a completely new framework;

Due to the material changes in the proposed Internal Models Approach (IMA), the **planned timeline for the QIS is not sufficient**;

The joint trade associations have been given a **very short timeframe to formulate and submit robust counterproposals** to key components of the IMA and the SA; and

Finally, the industry would like the opportunity to work with the TBG in refining the framework and designing and launching the QISs, **noting that this iterative process will take time.**”

Fundamental review of trading book – a revised market risk framework

Annex

Market liquidity

Introducing varying liquidity horizons in the market risk metric

The recent financial crisis was characterized by a sudden and severe impairment of liquidity across a range of asset markets and banks were often unable to promptly exit or hedge certain illiquid risk positions without materially affecting market prices. As a result the Committee has confirmed its intention to incorporate the risk of market illiquidity in the revised trading book regime

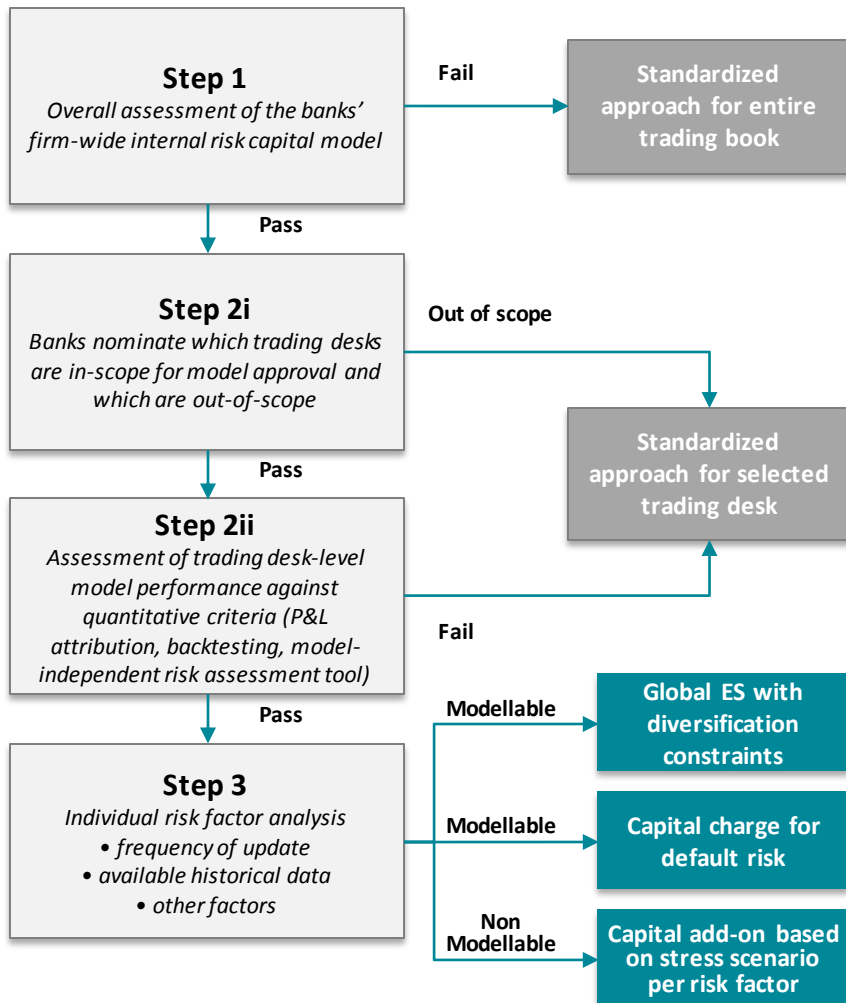
Liquidity horizon definition	Time required to execute transactions that extinguish an exposure to a risk factor without moving the price of the hedging of the instruments, in stressed market conditions
Liquidity horizon categories	Risk factors will be assigned to five generic liquidity horizon categories, ranging from 10 days to one year . Risk factors are grouped into 24 separate categories
Assessment of market liquidity	The liquidity horizon will be assigned by the Committee at the level of broad categories of risk factors . This is an improvement to the current regime, which implicitly assumes all risk factors are equally liquid.
Incorporating varying liquidity horizons in ES	The committee has agreed that the baseline approach is to apply risk factor shocks directly at longer horizons and that overlapping returns could be used
Liquidation approach	Varying liquidity horizons be incorporated in the market risk metric under the assumption that banks are able to shed their risk at the end of the liquidity horizon
Periodic update of liquidity horizons	The Committee expects that it will periodically revisit its assignment of liquidity horizons to reflect changes in market structures

Risk factor category	10 days	20 days	60 days	120 days	250 days
Interest rate		x			
Interest rate ATM volatility			x		
Interest rate (other)			x		
Credit spread – sovereign (IG)		x			
Credit spread – sovereign (HY)			x		
Credit spread – counterpart (IG)			x		
Credit spread – counterpart (IG)				x	
Credit spread – structured (cash and CDS)					x
Credit (other)					x
Equity price (large cap)	x				
Equity price (small cap)		x			
Equity price (large cap) ATM volatility		x			
Equity price (small cap) ATM volatility				x	
Equity (other)				x	
FX rate		x			
FX ATM volatility			x		
FX (other)			x		
Energy price		x			
Precious metal price		x			
Other commodities price			x		
Energy price ATM volatility			x		
Precious metal price ATM volatility			x		
Other commodities price ATM volatility				x	
Commodity (other)				x	

Focus on Revised internal models-based approach (1/2)

The process

Process for determining the eligibility of trading activities for the internal models-based approach



STEP 1

- Consists in the overall assessment of both the bank's organizational infrastructure (including the definition and structure of trading desks) and its firm-wide internal risk capital model
- In the event that a bank fails this initial assessment, the entire trading book would be capitalized according to the revised standardized approach*

STEP 2

- Banks have the option of nominating which specific trading desks will be in-scope for capitalization under the internal models-based approach
- Those desks that are not nominated (out-of-scope desks) will be aggregated and capitalized on a portfolio basis according to the revised standardized approach
- For those desks deemed to be in-scope, a desk-level model assessment is performed
- This desk-level approval process provides regulators with the ability to revoke models for specific trading activities without forcing the bank to apply the revised standardized approach to the entire trading book

STEP 3

- Following the identification of eligible trading desks, it will determine which risk factors within the identified desks are eligible to be included in the bank's internal models for regulatory capital
- A risk factor's eligibility for modelling is determined by evaluating the relative quality of the data based on factors such as availability of historical data and the frequency of observations
- For those desks that are permitted to use the internal models approach, all risk factors that are deemed to be "modellable" are to be included in the bank's internal, firm-wide ES model. Each non-modellable risk factor is to be capitalized using a capital add-on based on a stress scenario

Focus on Revised internal models-based approach (2/2)

Focus on model approval process (Step 2)

Desk eligibility to internal model is subject to compliance to all the three quantitative analyses below

P&L attribution

- The risk-theoretical P&L would be compared to the actual daily P&L. A significant degree of association between the two P&L measures is required, over an appropriate period of time. All risk factors that enter into the desk's risk management model would be used to calculate the risk-theoretical P&L
- Desk inclusion in internal model would be based on two metrics:
 1. Unexplained P&L / Actual P&L standard deviation $< \pm 10$
 2. Unexplained P&L variance / Actual P&L variance $< \pm 20$

Back Testing

- The 1 day static VaR at 97.5th and 99th percentile would be compared to actual P&L outcomes, using at least 1 year of current observations of the 1 day actual and theoretical P&L. An exception is defined when actual loss is greater than model loss
- The backtesting model quality is measured on the statistical probability of obtaining a limited number of exceptions. Increasing scaling factors are applied to capital requirements, on the basis of number of exceptions (grouped in 3 zones: green, yellow, red)
- Desk inclusion in internal model would be based on two metrics:
 1. Number of exceptions < 12 (with VaR 99 analysis)
 2. Number of exceptions < 30 (with VaR 97.5 analysis)

Model independent Risk Assessment tool

- Model-independent risk assessment tool to evaluate additional capital requirements for illiquid desks
- Desk inclusion in internal model would be based on the following ratio:

$$\frac{\text{Capital}_i}{\text{Exposure Measure}_i} < \text{Threshold}_i$$

where:

- Capital: Desk-level Expected Shortfall (ES) plus the sum of capital requirements emerging from the stress scenario add-ons under the non-modellable risk factors framework
- Exposure measure: Non-model dependent measure of the size of the desk
- Threshold: Regulatory-calibrated parameter that would trigger a desk “failing” the assessment tool. This would vary by the degree of illiquidity or complexity of a desk