Fundamental Review of the Trading Book
Preparing for the future in trading
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In January 2016, the Basel Committee on Banking Supervision (BCBS), after three consultative papers since 2014, published its final rules on the Fundamental Review of the Trading Book (FRTB). The FRTB rules, which represent a key post-crisis banking reform in the regulatory landscape, require all banks to implement the revised market risk standards by January 2019.

The FRTB rules pose significant challenges for banks, which will be required to reconsider their business model and approaches for measuring market risks, and to refine their balance sheet management strategy.

What’s new

The most notable changes relate to the revised boundary between the trading book and banking book, revised internal model requirements and standardised approaches for measuring market risk including the shift from Value-at-Risk (VaR) to an Expected Shortfall (ES) approach.

A revised boundary between the trading book and banking book

The final rules establish a more objective boundary that serves to reduce incentives to arbitrage between the banking book and trading book, especially arbitrage in regulatory capital requirements between the two books.

In this context, stricter limits as well as capital disincentives are applied to the transfer of financial instruments between the two books. If the capital charge on an instrument is reduced as a result of switching (in the rare instances where this is allowed), the difference in charges measured at the point of the switch is imposed on the bank as a fixed, additional (and disclosed) Pillar 1 capital charge.

A revised definition of the trading book is supplemented with a list of financial instruments prescribed in the rule book. Banks must receive explicit supervisory approval for any deviations from the list of instruments. Banks must have a clearly defined definition of the trading book and banking book as well as the treatment of internal risk transfers (IRT) across the regulatory boundary to ensure consistency and objectivity.

The standard provide supervisors with a discretion on switching between the trading book and the banking book if an instrument is deemed to be improperly designated. Banks must also prepare, evaluate and make available to supervisors reports on their boundary determination and compliance, inventory ageing, daily limits, intraday limits (for banks with active intraday trading) and assessments of market liquidity.

A revised Standardised Approach (SA)

The key change to the standardised approach is the greater reliance on risk sensitivities as inputs into capital charge calculations, the introduction of a standardised Default Risk Charge (DRC) and residual risk add-ons (RRA). It also facilitates the use of the standardised approach as a fall-back and floor to the revised internal model approach.
The sensitivity-based approach captures three risk sensitivities, namely, ‘delta’, ‘vega’ and ‘curvature’ risks. Banks’ instruments are first mapped to a set of regulatory prescribed risk factors to which shocks are applied to calculate a capital charge for the individual risk factors. Sensitivities derived from its pricing models are then used to determine the size of risk positions with respect to each risk factor. The risk-weighted sensitivities are aggregated within each bucket, using regulator-prescribed correlations applied within an aggregation formula. The resulting ‘bucket-level’ capital charges are then aggregated using identical techniques from the previous step to determine the ‘risk class-level’ capital charge. Finally, the aggregate capital charge under the sensitivities-based method is the simple sum of each risk-class level capital charge.

The standardised DRC requires that positions are allocated to default risk bucket categories (for example corporates, sovereigns and local governments for non-securitisation exposures) which allows for some limited hedging recognition within each individual bucket category, but not across different bucket categories.

The Residual Risk Add-on (RRAO) approach provides for a simple and conservative capital treatment for the more sophisticated / complex instruments that would otherwise not be captured in a practical manner under the other two components of the revised standardised approach. It is the simple sum of gross notional amounts of the instruments bearing residual risks, multiplied by a risk weight of 1.0% for instruments with an exotic underlying and a risk weight of 0.1% for instruments bearing other residual risks.

A revised Internal Model Approach (IMA)
The enhancements to the internal models approach for market risk promotes a more coherent and comprehensive risk capture that takes better account of ‘tail risks’ and market illiquidity risk by replacing VaR and Stressed VaR with a single Expected Shortfall (ES). ES measures the riskiness of a position by considering both the size and the likelihood of losses above a certain confidence level. In this context it should be noted that:

- ES must be calibrated to a period of significant financial market stress. It allows for maximum stress to be calculated on a reduced set of bank-selected risk factors, provided that these factors explain at least 75% of the variation in the ES model with a full set of risk factors; and
• The concept of varying liquidity horizons is introduced in order to factor in the risk of market illiquidity. The 'liquidity horizon' is defined as the time required to exit or hedge a risk position without materially affecting market prices in stressed market conditions.

The revised approach also introduces a more rigorous model approval process that enables supervisors to remove internal modelling permission for individual trading desks. In order to qualify as a ‘model-eligible’ desk, a trading desk needs to comply with model validation criteria, otherwise the desk must be capitalised under the standardised approach. Banks need to demonstrate proficiency in modelling the following two attributions with an appropriate degree of accuracy:

• Profit and loss (P&L) attribution - a test to determine whether the P&L based on risk factors included in the trading desk’s risk management model captures the material drivers of actual P&L; and

• Backtesting attribution - a test to determine how well the risks in an internal model are captured.

Within a ‘model-eligible’ trading desk, the bank must also be able to identify those risk factors that can be modelled from those which cannot. Risk factors that cannot be modelled must be capitalised individually using a separate stressed capital add-on from the ES approach used for those risk factors which can be modelled.

Finally, the revised approach puts constraints on the capital-reducing effects of hedging and portfolio diversification. The total ES capital charge for modellable risk factors is calculated as an equal-weighted average of:

• an ‘unconstrained’ bank-wide ES charge with diversification benefit recognised across all risk classes; and

• a set of ‘constrained’ partial ES charges – one for each of the broad regulatory risk classes (interest rate risk, equity risk, FX risk, commodity risk, and credit spread risk) – added up as a simple sum with no cross-risk class diversification benefit recognised.

The revised framework replaces the Incremental Risk Charge (IRC) with a DRC model which captures default risk exclusively (i.e. separate from all market risks, including credit spread risk). In addition, it also places limitations on the types of risk factors and correlations that can be used within the model.

What are the challenges

The enhanced FRTB framework is far more complex than the existing one and it introduces significant challenges to banks for a number of reasons:

Trading activities

FRTB is likely to increase the cost of hedging for banks or corporate treasuries significantly, e.g. when a single stock is hedged with indexes, or when a four-and-half year swap is hedged with a five-year swap. Under the FRTB regime, the current accepted flexibility to hedge EONIA (SONIA) with EURIBOR (LIBOR) will come with an extra cost, as it punishes anything that does not offset perfectly with additional capital charges. A direct consequence will be a crowding of the market, with all dealers focusing on benchmark trading. That will naturally increase the cost paid by clients to obtain perfect hedges or support an increase in basis risk charges.

The revised IMA requires banks to comply with model validation criteria in backtesting which could lead to banks specialising in a particular product offering, potentially with exotic derivatives that pose potential difficulties in backtesting being withdrawn.
**Data challenges**

The revised SA rules require good quality static data to be associated with each risk factor. The mapping and bucketing of data to the specified requirements, or the transformation of sensitivities calculated under the current regime to match FRTB rules is a daunting task, even for relevant smaller size of bank balance sheet. The sourcing of data for less liquid products in order to avoid highly punitive RRA capital charges is also a key focus area for banks. For example, industry sector, region, market capitalisation and credit rating are all required attributes under the new approach. Some of these inputs may not yet exist in production and as a result (and depending on the bank’s current system and infrastructure capabilities) significant technical enhancements may be required.

IMA requires the classification of risks as NMRF (non-modellable risk factor) as well as the sourcing of the requisite amounts of historical data for the multiple liquidity horizons are the main challenges. Given the new model validation criteria of Backtesting or Profit and Loss attribution testing, banks have extra incentive to ensure data required to succeed on the testing are readily available and accurate.

Banks will be expected to implement and maintain robust systems and control frameworks to ensure segregation between the regulatory books at all times.

Finally, BCBS239¹, which outlines risk data aggregation and reporting principles, will require banks to opt for the option where data is owned by the Front Office in this instance, keeping data centralised. Under the FRTB, this change will trigger a move to a decentralised risk model and data architecture, which will be at the opposite of the direction taken by banks designing and implementing centralised data architecture to comply with BCBS239.

**Methodologies and processes**

For banks considering the SA model and looking to leverage its existing sensitivity-based VaR model, there is a complexity to consider given the difference between existing sensitivity calculations and the prescribed FRTB formula. In this respect, some banks might have to duplicate their analytics at a significant cost, with a set of calculations for FRTB and another set of sensitivities calculation for internal risk management, unless the results show discrepancies between the two set of formulas are minor.

The new framework under IMA, requires the switching from value-at-risk (VaR) and Stressed VaR to ES which require multiple liquidity horizon per risk categories, which will significantly increase the complexity of the computational requirement to calculate internal model market risk capital.

P&L tests are critical for any bank that wishes to use IMA, however, only a few sophisticated financial institutions have in place the necessary framework to successfully run P&L tests.

Moreover, the new desk-level approach for reporting and validation imposes changes to all related processes and procedures. Given the changing role of the desk heads in the FRTB universe, there is a clear trend to transfer the responsibility of data for risk and capital under the ownership of the Front Office, with the CRO in charge of risk framework definition and implementation while sharing responsibility of daily production with Front Office.

**Other challenges**

The revision of the framework could increase capital charges significantly for some banks, which introduces significant challenges and dilemmas in banks’ capital allocation strategies and business model.

The reduced flexibility will likely lead to higher costs, especially given that the restrictions on transfers between the regulatory books will likely increase capital requirements. The new IRT rules effectively reduce or remove any capital benefit resulting from being a universal bank. The need to match

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¹ Deloitte BCBS 239 - A catalyst for gaining competitive advantage  
external hedges to IRTs can be costly and raises questions as to whether this can provide the market with increased visibility into the bank's banking book hedging strategies.

Furthermore, banks will be subject to more onerous documentation and risk management standards with respect to the maintenance of the boundary and validations. The re-designations between the different regulatory books will be subject to additional public disclosures.

What should firms do

The impact of FRTB will be felt far beyond risk, finance, strategy, business model, IT and trading desks, and will require a fundamental rethinking of banks' business strategies and balance sheet models.

Systems and IT infrastructures review

Banks should assess the impact of the FRTB recalibrations on trading and risk infrastructure and focus on and commit to updating and integrating systems and IT capabilities to support the complex computational and operational tasks (e.g. sensitivity analysis, P&L test, market data, ES and sophisticated simulation).

Methodology review

Banks should start working on new methodology implementation (e.g. ES, risk factor sensitivity analysis and CVA computation) and process reviews, as well as a 'what-if?' analysis about the direction of travel towards either the SA or IMA approach.

Data aggregation and reporting review

Banks should conduct a gap assessment on FRTB data and reporting requirements to ensure sources of reference data needed to produce computational measures (SA and IMA) and the regulatory disclosure requirement. Banks should also coordinate with other in-flight programs such as banks’ BCBS 239 programs to ensure the alignment between risk and finance, as the shared common components, data attributes, valuation and calculation models need to be consistent with the FRTB framework.

FRTB process review

The revised FRTB regime drives a re-alignment of roles and responsibilities between Risk, Finance and Trading Desks, especially for the processes of computation, reporting, controls and back testing. Banks should take action by re-mapping processes associated with roles and responsibilities to ensure the alignment with the FRTB requirement.

Dynamic balance sheet model

Banks should assess the strategic drivers of FRTB and feed these into its dynamic balance sheet model to allow for an optimised balance sheet structure, to be simulated as result of the changes in regulatory regime (FRTB in this case). Under a dynamic balance model, banks’ capital, liquidity and profitability positions are optimised and tested over a variety of FRTB scenarios and options on a forward-looking basis.

Stakeholder communications

Banks should engage with regulators early to avoid confusions in interpretations and to mitigate the unintended consequences associated with a full implementation of FRTB. In addition, banks should also communicate internally to increase awareness and engagement regarding the implementation timing of the FRTB, the anticipated capital impacts, business strategy and enterprise capital planning considerations and the anticipated size and scale of the bank’s FRTB program and related resource needs.
Conclusion

FRTB is expected to have a substantial impact on banks' business model and balance sheet structure. Banks that have a culture of following a disciplined approach and make good choices in managing their dynamic balance sheet model will likely be at a distinct advantage and better positioned in the post-FRTB world in terms of their operating costs, ability to manage liquidity and solvency risks, and their ability to understand profitability across their organisation.

In practice, a number of US and European banks have already initiated programs, or are preparing to formally launch programs, with a view to completing most changes by the end of 2017 and preparing for parallel run by the second half of 2018.
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