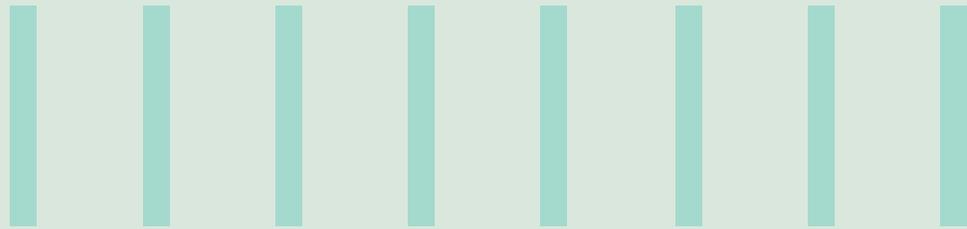




FUNDAMENTAL REVIEW OF THE TRADING BOOK (FRTB)

Regulatory Changes, Impacts and Recommendations



Introduction

Fundamental Review of the Trading Book (FRTB) regulation is the recent buzz in the financial services industry — especially in organizations that have significant exposure to market risk. This regulatory mandate aims to address the industry apprehensions vis-a-vis the scale and complexities around market risk capital calculations. This regulation is expected to offer uniformity in application of requirements across various types of banks and financial institutions that are exposed to market risk.

FRTB's original standard was proposed by the Basel Committee of Banking Supervision (BCBS) in Jan 2016 (BCBS D352). The standard had brought in a major overhaul to enable the effective management of capital requirements for market risk (which was initially part of Basel 2.5). Further, FRTB underwent revision to become the finalized standard — Jan 2019 (BCBS D457) — and which is expected to come into force by 1st January 2023.

In this point of view, we share insights on the changes made under FRTB (BCBS D457), the potential impacts of FRTB on the business and IT divisions of involved financial institutions (FIs) and provide recommendations for firms to enable effective implementation of this key regulation.

Key objectives of FRTB

Following are some of the key objectives of FRTB vis-à-vis market risk capital calculations.

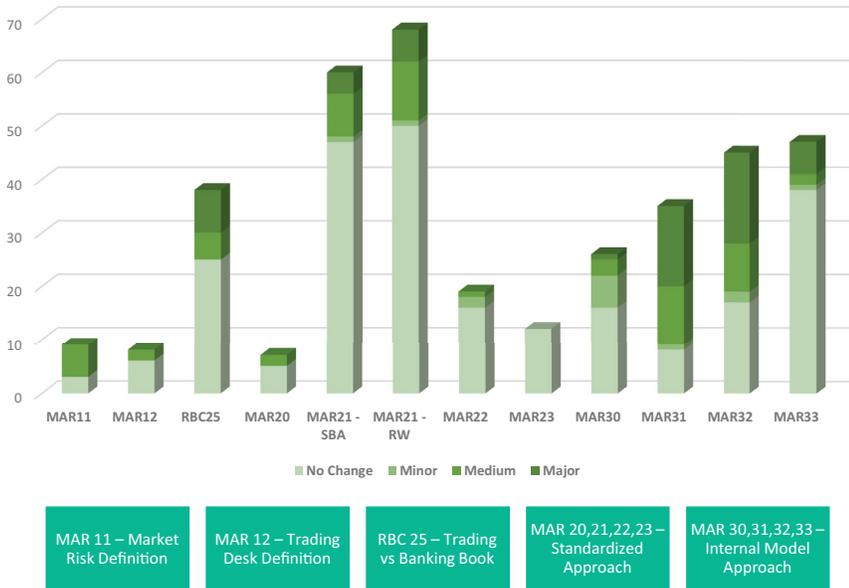
- **Supplementary Controls:** Strong demarcation between the trading book and banking book boundaries with clear guidelines to reduce arbitrage.
- **Robust Measures:** Introducing Expected Shortfall (ES) as a mainstream metric over traditional Value at Risk (VaR) to measure market risk capital requirements.
- **Consistent Methodology:** Well-defined and more robust methodology that follows prescribed standards for the revised Risk-Weighted Asset (RWA) calculations. All shortcomings identified as a part of Quantitative Impact Study (QIS), published in Basel III Monitoring Report (BCBS D426), is addressed in the final standards.
- **Highly punitive:** To help ensure a disciplined approach by introducing Profit and Loss (P&L) Attribution tests (PLA). PLA is one of the most groundbreaking and critical methodology from BCBS to ensure that the front and back office risk engines are well aligned.



Analysis of changes in FRTB (BCBS D457)

With the revisions made under FRTB (BCBS D457), the regulation now looks more complete. It provides more clear guidelines on multiple aspects — including banking book and trading book demarcation, Standardized Approach (SA) calculations, Internal Models Approach (IMA) calculations, PLA etc. Refer Exhibit-1 for a snapshot of the extent of changes made under FRTB (BCBS D457) in comparison to the earlier version (FRTB (BCBS D352)).

Severity of Changes by Chapters - D457



Detail on Legends	
No change	No change in standards seen between the versions.
Minor	Changes are limited to clarification to existing standards based on QIS/consultative document published.
Medium	Changes are not estimated to impact the overall architecture/strategy differently from the earlier version of the standard.
Major	Changes impact overall architecture/strategy and will need banks to relook at their solution approach.

Exhibit-1: Extent of changes made under FRTB (BCBS D457)

Refer Exhibit-2 for high-level view of the changes made under FRTB (BCBS D457).

Generic Components: Revisions	Standardized Approach: Revisions	Internal Model Approach: Revisions
<p>Implementation Timelines</p> <ul style="list-style-type: none"> Go live date deferred to 1st January 2023. <p>Trading Desk – Definition Changes</p> <ul style="list-style-type: none"> Roles, responsibilities, hierarchies redefined. <p>Scope Changes</p> <ul style="list-style-type: none"> Clarity on instruments to be included in banking books, trading books, and credit valuation adjustment (CVA). <p>Stressed Periods</p> <ul style="list-style-type: none"> Stressed periods updated minimum of once in a quarter or when material changes encountered in portfolio. <p>Aggregated Capital – Market Risk</p> <ul style="list-style-type: none"> Introduction of new surcharge for trading desk falling under amber zone. 	<p>Buckets, Risk Weights and Correlations</p> <ul style="list-style-type: none"> Introduction of additional buckets across risk classes. Risk weights calibrated across risk classes – Delta GIRR, Delta CSR non-securitization, Equity, FX. <p>Calculations Changes</p> <ul style="list-style-type: none"> Curvature capital Aggregated capital scenarios <p>Other Changes</p> <ul style="list-style-type: none"> Instrument scope Treatment of products — FX Treatment of products — index instruments/ multi underlying options 	<p>Model Requirements</p> <ul style="list-style-type: none"> Risk Factor Eligibility test (RFET) New module within bucketing approach (for RFET) New standards for modellability of risk factors <p>Non Modelling Risk Factors (NMRFs)</p> <ul style="list-style-type: none"> Revised framework for stressed loss for NMRF Revised standard for capital calculations <p>Backtesting, P&L Attribution Tests —New Standards</p> <ul style="list-style-type: none"> Test requirements P&L definition for PLA test and backtesting PLA calculation methodology Test data alignment PLA test metrics PLA test metrics evaluation

Exhibit-2: High-level view of the changes made under FRTB (BCBS D457)

FRTB: Business and IT impacts and recommendations

In a COVID-19 struck volatile global market, FIs' existing IT infrastructure is turning out to be their biggest impediments in effective implementation of the FRTB requirements. This is because several banks, especially the bigger ones, are expected to face significant challenges in effectively tracking, aggregating and

presenting the required data under FRTB. Additionally, banks that are grappling with multiple legacy systems and data warehouses are expected to face major issues in realigning the data from their front to back office.

Therefore, FIs have been looking for advice from leading domain consulting

firms, technology consulting firms and solution providers. They expect these providers to act as strategic partner and offer the required subject matter expertise and technology capabilities for effective and flawless FRTB implementation. Refer Table-1 for some of the key FRTB implementation imperatives and our recommendations for FIs.



FRTB IMPLEMENTATION IMPERATIVES	RECOMMENDATIONS FOR FIs
Data Strategy Programs	
<p>Most banks today lack robust data strategy and governance framework. Resultantly, these banks struggle to gain comprehensive and long-term view of their market risks. Banks therefore need to work on building and optimally leveraging their data capabilities, to accelerate their business strategy, post the FRTB implementation.</p>	<ul style="list-style-type: none"> • Work towards: <ol style="list-style-type: none"> a) Partnering with reputed FinTechs and leading service providers. b) Define unified architecture for sourcing of risk data. c) Leveraging big data framework. • Focus on data normalization, parsing, validation, lineage, and reconciliation aspects for complex derivative transactions. • Enable capabilities for real price observations for Risk Factor Eligibility Test (RFET) tests. • Improve market data sourcing process for better data quality management (especially NMRF data).
Big Data Framework	
<p>Complex calculations in FRTB mandate the need for an enhanced suite of risk engines. Therefore, banks must strengthen their front and back office technology infrastructure to enable more efficient and optimized capital management process.</p>	<ul style="list-style-type: none"> • Leverage advanced technology, for example: <ol style="list-style-type: none"> a) Adopt machine learning for complex derivative analytics. b) Assess and utilize Python/R/SAS-based quantitative tools. • Focus on: <ol style="list-style-type: none"> a) Sensitivity calculations as per SA. b) Risk Factor Eligibility Tests (RFETs) c) PLA Tests d) Back-testing.
Risk Analytics	
<p>Banks have multiple regulatory programs going on in parallel. To gain optimal cost benefits and fulfil the multiple regulatory mandates more efficiently and effectively, banks should take a collaborative approach. For which, they should actively work on identifying and leveraging the synergies across all relevant regulatory programs (such as BCBS 239, UMR).</p>	<ul style="list-style-type: none"> • Focus on: <ol style="list-style-type: none"> a) Implementing a streamlined, flexible, scalable, and unified risk architecture. b) Enabling enterprise view of risks. • Capitalize on synergies across FIs' several regulatory programs. For example: <ol style="list-style-type: none"> a) BCBS 239 Regulation — which deals with principles for effective risk data aggregation and risk reporting, emphasizes on an aggregated risk data framework with clear data lineage. Such an approach should also be leveraged for FRTB implementation as this would help eliminate data silos and offer direct access to the golden source. b) Uncleared Margin Rules (UMR) regulation specifies similar sensitivities calculations as those in FRTB under SA for delta, vega and curvature risk. Hence, there is clear synergy to be had between the FIs' FRTB and UMR programs.
Data taxonomy	
<p>The substantial differences in data taxonomy across FIs' current risk systems across front and back office has been posing major challenge for banks. For example, those related with how to classify investment products into various asset classes and associated risk types.</p> <p>Considering that FRTB aims to bridge the gaps between front and back office systems vis-à-vis risk calculation methods, it is crucial that FIs focus on implementing single data taxonomy across the various risk features (such as risk types, sensitivity definitions, NPRFs, PLA tests). This will help ensure consistency in data interpretation and usage across the institution.</p>	<ul style="list-style-type: none"> • Focus on developing and implementing a common and consistent data taxonomy across front and back office — such as related to the risk sensitivities utilized in SA. • The above would help ensure accurate comparison of the key metrics. For example, PLA test, trading desk's (front office) risk-theoretical P&L (RTPL) is compared against Hypothetical PnL (HPL) on a frequent basis.

Table-1: FRTB — implementation imperatives and recommendations

FRTB implementation: Build versus buy consideration

There are wide range of FRTB-related tools and solutions available in the market that FIs' can leverage. These include, **risk engine platforms, data management tools**, reporting tools and other IT services enablers. FIs may also choose to build the required capabilities in-house. Both the options "Build" or "Buy" have their pros and cons. Therefore, FIs' should think and act strategically. Before taking a decision, they should

conduct thorough technical and cost-benefit analysis of their firm's current risk IT infrastructure and the available vendor solutions in the market.

Large and well-established FIs may benefit from adopting a **hybrid approach**. In hybrid approach, a large FI would adapt and enhance some of their existing FRTB-related core solutions that remain robust and scalable. For the remaining needs,

it would buy and seamlessly integrate leading 3rd-party solutions. FIs', with this approach, would be able to optimize implementation cost and reap immense benefits from the vendor solutions' advance capabilities (such as AI, ML and RPA). On the other hand, smaller FIs' whose legacy risk systems are beset with major shortcomings, may benefit from extensive adoption of the new-age leading vendor solutions.

FRTB implementation: Infosys case studies

- For a large American multinational financial services company, Infosys is working to overhaul the firm's data warehouse strategy, technology in the market and counterparty credit risk areas. The goal is to improve data quality and lineage, normalize the data elements and data processing capabilities across market, counterparty credit risk areas and implement data centralization in Hadoop environment. These changes would aid in effective fulfilment of the FRTB-CVA and SA-CCR regulatory requirements.
- For a Dutch Bank, Infosys is involved in consulting and IT implementation for the SA. Working towards quantification of market risk across various products and sensitivities under diverse scenarios.
- For a large global bank, Infosys is involved in the SA framework creation and implementation for one of the asset classes to be able to report per FRTB requirements. Solution includes identification of the sub asset classes and products, risk quantification, data source identification and configuration of calculations in the bank's technology framework.
- For a US Clearing Corporation, Infosys is involved in building FRTB pooled market data utility.

(Sourcing market data is a major challenge for financial institutions that have exposure to market risk. While

creating a pooled market data utility can be a solution, it also has cost factor associated with it.)

- For a U.S.-based bank, Infosys is involved in a consulting study on the scope of material compliance and full compliance for BCBS 352. The steps involved include FRTB

risk quantification, data source identification, and configuration of calculations in the bank's technology framework. Further, value addition includes the overall improvements in strategic planning for the bank (based upon its risk appetite and present state, and as depicted by risk quantification).



Conclusion

The global financial crisis of 2008 was a primary reason for FRTB being proposed to tackle the idiosyncratic risks in trading book portfolios. Unfortunately, however, for several years now, banks and financial institutions had been struggling with the uncertainty around the final FRTB rules and its implications.

Given that the FRTB standards are finalized now, FIs should deep dive to strategically prepare, design and flawlessly execute their FRTB implementation program. The postponement in FRTB implementation date due to the current COVID-19 situation has provided institutions with additional time, hence, this time should actively be utilized to focus on overhauling their entire market risk management architecture. Also, while the BCBS regulations are open to varied adoption as per the individual national regulators, it would be a missed opportunity if entities can't or don't implement the regulation to the extent envisaged under FRTB (BCBS D457).



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