Building a better working world

Fundamental Review of the Trading Book (FRTB)

EY regulatory alert on the March 2018 Consultative Document and FAQ

Contents

The proposed revisions to the new market risk framework, Fundamental Review of the Trading Book (FRTB),[1] were published in a Consultative Document (CD)[2] released by the Basel Committee on Banking Supervision (BCBS or the Committee) on March 22, 2018. The BCBS also released an updated document of frequently asked questions (FAQ)[3] to address broader questions on FRTB implementation from industry. The CD requests comments by June 20, 2018, and restates the BCBS go-live date of January 1, 2022, as published in the BCBS finalized Basel III reforms.[4]

The CD includes proposals that should provide overall risk-weighted assets (RWA) relief. Standardized approach (SA) risk weights, correlations and curvature recalibrations should lower SA RWA. Proposed changes to the Profit and Loss Attribution (PLA) framework, such as market data clarifications, new test metrics and adjustments to PLA test failure consequences, can be anticipated to improve the likelihood of banks receiving and maintaining Internal Model Approach (IMA) desk approval or lessen the cliff effect of losing IMA. However, the CD also introduces new, stringent market data standards that could result in more risk factors being subject to non-modellable risk factor (NMRF) add-ons. These market data standards are also operationally complex, significantly increasing the work that banks may have to do related to market data.

Overall highlights

Lower capital requirements for SA

- The scope of liquid currency pairs is expanded, allowing for application of lower risk weights.
- Risk weights are reduced for the general interest rate risk (GIRR), equity (EQ) and foreign exchange (FX) risk classes, although a range is still being considered, and credit spread risk (CSR) delta risk weight for government-sponsored enterprises (GSEs) is clarified to be 1%.
- The curvature charge is revised to reduce granularity of shock scenario application and modify the alternative specification for negative curvature.

Potential for greater application of IMA

- The same market data inputs may be used for both Risk Theoretical P&L (RTPL) and Hypothetical P&L (HPL) for P&L Attribution test (PLA).
- PLA metrics are changed to reflect correlation and goodness of fit, and test frequency is reduced to quarterly, which should improve test discretion, but thresholds may require further assessment.
- An "amber zone" is introduced to address cliff effect for desks that are capitalized under IMA, but with a capital surcharge.

Additional NMRF open questions and new market data requirements

- Seasonality, standardized bucketing and aggregation of idiosyncratic EQ risk are all discussed but left open for further feedback from the industry and analysis.
- Alternative bucketing options are considered, with requests for feedback and additional proposals, to balance consistency across the industry of standardized bucketing with the flexibility to apply to different instruments of bank-specified buckets.
- New principles are introduced for market data used for model calibration, with consequences of an NMRF add-on if not met, similar to existing risks not in Value-at-Risk (VaR) standards in certain jurisdictions.

[1] Basel Committee on Banking Supervision, January 2016, https://www.bis.org/bcbs/publ/d352.pdf
[2] Basel Committee on Banking Supervision, March 2018, https://www.bis.org/bcbs/publ/d436.pdf
[3] Basel Committee on Banking Supervision, March 2018, https://www.bis.org/bcbs/publ/d437.pdf
[4] Basel Committee on Banking Supervision, December 2017, https://www.bis.org/bcbs/publ/d424.pdf

Potential RWA and operational impacts

The table below highlights key areas of impact based on the revisions proposed by the BCBS in the Consultative Document and clarifications in the FAQ.

Topic	Proposed revisions	Market risk capital	Operational complexity	Comments
Standardized approach	Floor for low correlation scenarios	▼	◄►	▸ A potential capital benefit exists for portfolios with highly correlated risk factors within buckets.
	Curvature charge structural changes	▼	◄►	▸ The reduction in granularity of shock application, flooring of negative curvature and other changes are expected to reduce capital.
	Lower risk weights for GIRR, FX and EQ risk classes	▼	◄►	▸ GIRR risk weights are lower by 20%–40%; EQ and FX risk weights are lower by 25%–50%.
	Decomposition of indices and options with multiple underlying	◄►	▼	▸ Banks are not required to decompose for curvature but may still have a capital incentive to do so.
	Simplified standardized approach	▲	▼	▸ A simplified alternative to the SA may reduce operational complexity but may also increase capital charges for smaller banks.
	Residual risk add-on for bonds with multiple call dates	▲	▲	▸ Municipal bonds may be particularly impacted.
P&L attribution	Allowance to align market data for RTPL and HPL	▼	▲	▸ Market data alignment will enhance the ability to pass PLA but may require new operational processes.
	Modified PLA test metrics and reduced frequency	▼	▼	▸ Alternative test metrics are likely to provide greater chance of passing PLA for well-hedged portfolios, pending final calibration.
	Clarified definitions of HPL, actual P&L and RTPL	◄►	▲	▸ The valuation adjustments treatment will require new operational processes and potential inclusion in Expected Shortfall (ES) in some circumstances.
	Relaxed PLA test failure consequences (traffic light approach)	▼	▲	▸ The traffic light approach is anticipated to smooth capital volatility in instances when desks cannot meet PLA metric thresholds.
Non-modellable risk factors	Proposed alternatives for NRMF bucketing	◄►	◄►	▸ Capital impacts will depend on the NMRF bucketing approach that is ultimately adopted. ▸ The complexity of implementing standard buckets may depend on a bank's existing infrastructure and portfolio.
	Requirements for data pooling and committed quotes	▼	▲	▸ Additional efforts to onboard and map vendor data may be required. ▸ Firms may need to incorporate additional governance to align with BCBS principles.
	Enhanced market data requirements	▲	▲	▸ New stringent market data requirements could significantly impact time series management process and result in additional NMRF charges.
Trading book boundary and trading desk	Allowance to assign individual traders to two trading desks	◄►	▼	▸ Organization of trading desks is more flexible.
	Transfers and reclassifications	◄►	▲	▸ No relaxation of surcharge exists for reclassifications due to external changes (e.g., delisting) or accounting reclassifications.
	Clarifications on trading book designations	◄►	▲	▸ Additional operational effort may be required to identify trading repos, net investments in EQ funds and the monitoring of net short credit/equity.

Legend

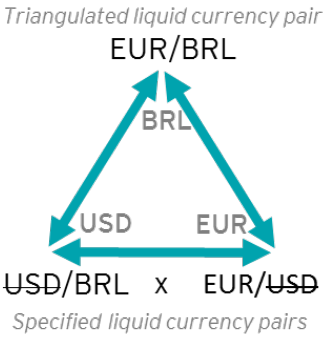
- Green indicates an anticipated decrease in market risk capital or operational complexity.
- Gray indicates an anticipated neutral impact or an impact that is dependent on a bank's portfolio composition.
- Red indicates an anticipated increase in market risk capital or operational complexity.

Standardized approach (SA)

The BCBS revises the SA charge to better reflect economic risks applicable to a bank's trading positions and aligns the resulting overall level of capital requirements with the Committee's expectations.

An extension of preferable risk weight treatment will reduce the capital requirements for FX exposures, especially in cases where USD is not the reporting currency of the bank (e.g., CAD, GBP, JPY).

- Banks are allowed to apply a lower risk weight to currency pairs triangulated from two specified liquid pairs. The EUR/BRL example on the right illustrates that under this revision, banks can apply specified currency treatment to determine risk weights for SA calculation and 10-day liquidity horizon for ES calculation.



A "low correlation" floor will reduce the severity of the scenario when aggregating within and across buckets when the correlation parameter is greater than 80%.

- The low correlation scenario has been observed to produce overly conservative correlations for risk factors that are highly correlated, regardless of market conditions. The proposed formula for the low correlation scenario brings the low correlation scenario more in line with empirical observations.

Revisions to the curvature charge for non-linear instruments address industry advocacy related to potential long gamma cliff effects and inconsistent application of shocks within curvature buckets.

- Consistent shock scenario application may simplify the curvature calculation process.
- The introduction of a floor in the curvature formula addresses the potential cliff effect due to discontinuity in curvature aggregation, while the application of a scalar to curvature sensitivities addresses potential double-counting of FX curvature risk.

Reduced risk weights for GIRR, EQ and FX will likely reduce standardized approach RWA.

- The BCBS proposes reducing risk weights for GIRR, EQ and FX risk classes to bring the estimated capital impact of the SA in line with its initial expectations. The final recalibration is still pending but will be determined based on further data and feedback provided by banks.
- Lower risk weights will reduce both delta and curvature capital charges, which may impact the business case for internal model approval.

Clarification on index/multi-underlying options may reduce curvature charge operational complexity but may also cause some positions to fall into the more punitive residual risk add-on (RRAO).

- The addition of a no-look-through approach for index/multi-underlying options curvature charge calculation would reduce the operational complexity for banks, but this option could be more punitive, as it requires application of the highest prescribed delta risk weight.
- Additional language now specifies that index instruments and multi-underlying options are subject to RRAO if they fall within the definitions set out by the Committee.
- Language regarding the treatment of multi-underlying options with delta sensitivity in different directions has been removed.

A simplified alternative to the SA has been proposed that may reduce operational complexity but may increase capital charges for smaller banks.

- The Committee proposes the simplified alternative approach, one of two alternatives described in the June 2017 BCBS Consultative Document, which applies specified scaling factors to the Basel II standardized capital requirements for interest rate, EQ, FX and commodity risk classes in the trading book. It is unclear how or if the US is going to adopt a simplified alternative to the SA, given the lack of the Basel II standardized capital requirements for general market risk in the US.
- The BCBS advises that the simplified approach is considered more conservative than the "full" SA and would likely not be suitable for global systemically important banks (G-SIBs) and banks using internal models or maintaining correlation trading portfolios.

Three new PLA metrics

For assessing the relationship between HPL and RTPL:

1. **Spearman correlation:** a measure of the correlation between the two time series of P&Ls

One of the following two metrics for assessing the distributions of HPL and RTPL:

2. **KS test:** a nonparametric test to quantify the distances between two distributions; KS is easy to visualize, but it uses only maximum difference to evaluate the goodness of fit
3. **Chi-squared test:** a nonparametric statistical hypothesis test using Chi-square statistic to sample distribution classified into "bins" to compare the distribution of HPL and RTPL; Chi-squared may be sensitive to small frequencies

P&L attribution (PLA)

HPL and RTPL market data alignment will make PLA easier for banks to pass, which may increase the number of desks eligible for internal models.

- The PLA test assesses the relationship and similarity of distributions between RTPL and HPL in order to determine the materiality of risks that are potentially missing from the risk management model.
- Differences in HPL and RTPL may also arise due to inconsistent market data inputs used in the front office and risk models.
- The revised guidance allows banks to align RTPL market data with the data used in HPL, limiting PLA test failure due purely to data differences.

New PLA test metrics and thresholds will need to be further analyzed to determine impact on ability to pass the PLA test; however, it is expected that the new tests will allow for a higher likelihood of passing PLA.

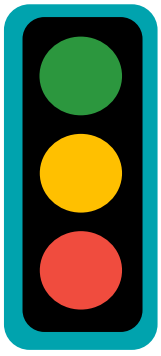
- The BCBS proposes the following new PLA test metrics:
  - Spearman correlation test
  - One of two alternative metrics, pending industry feedback: Kolmogorov-Smirnov (KS) test or the Chi-squared test
- The Committee also reduces PLA test frequency to quarterly using the preceding 250 business days of data; the revised frequency may reduce potential volatility in PLA results.

Clarity on the definitions of HPL, actual P&L and RTPL will inform critical implementation decisions for in-flight FRTB programs.

- The Committee clarifies the treatment of credit valuation adjustments (CVAs) and valuation adjustments (VAs) for HPL and actual P&L:
  - CVAs and VAs deducted from Common Equity Tier 1 must be excluded from both measures.
  - All other market risk-related VAs, regardless of frequency, must be included in actual P&L, while only VAs that are updated daily will be included in HPL.
- The revised guidance also specifies that HPL for backtesting should be identical to HPL used for PLA.
- The definition of RTPL is further clarified:
  - RTPL should be calculated using all the risk factors that are included in the desk's risk management model, therefore including both modellable risk factors included in the ES model and non-modellable risk factors subject to a stress scenario capital charge.

Introducing a traffic light approach will smooth desk-level capital volatility and avoid the capital cliff effect going from IMA to SA.

- Trading desks that fail the PLA test must use SA for capital calculation; this automatic fallback to SA could cause a significant change to the desk's capital requirements overnight. To mitigate this effect, the BCBS proposes a traffic light approach that will place desks into three zones based on PLA performance.
- The introduction of the "amber zone" will limit the desk-level capital volatility stemming from a desk failing the PLA test. Desks within the amber zone would be subject to an additional capital requirement that will be added to the desk's overall IMA requirement.

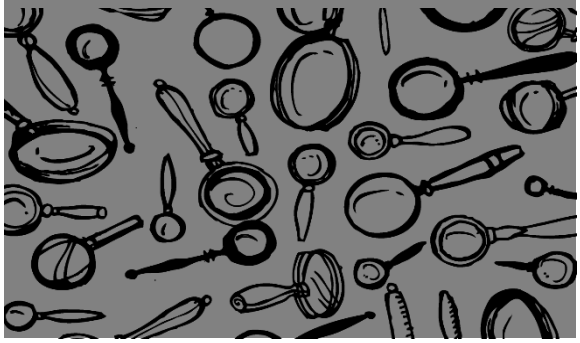


- **Green**: approved use of IMA
- **Amber**: formulaic add-on based on the IMA and SA difference
- **Red**: fallback to SA

Real price bucketing alternatives

Alternative proposals for establishing buckets for real price observations:

- **Alternative #1**: Banks are allowed to establish their own non-overlapping buckets:
  - A risk factor can be assigned to only one bucket and must correspond to the risk factors in RTPL of the bank.
- **Alternative #2**: Banks must use prescribed buckets, potentially at least as granular as the buckets used in the standardized approach:
  - Eleven buckets by maturity for interest rate, FX and commodity risk factors
  - Six buckets by maturity for credit and equity risk factors
  - Six buckets by expiry and nine buckets by strike for all volatility risk factors



Non-modellable risk factor (NMRF)

The requirements for mapping real price observations (RPOs) to risk factors are clarified, and two bucketing alternatives are proposed that differ in granularity and prescriptiveness.

- The BCBS clarifies that any RPO for a transaction should be counted as an observation for all risk factors for which it is representative. RPOs are considered representative of risk factors where the bank is able to extract the value of the risk factor from the value of the real price.
- For risk factors that represent a point on a curve or a surface, a bucket approach may be used to count RPOs for the risk factor eligibility test. The BCBS proposes two possible alternatives for establishing buckets:
  - Alternative #1 gives banks greater degrees of freedom but retains operational complications of linking NMRF and RTPL and may result in more granular buckets.
  - Alterative #2 promotes greater consistency across the industry and may simplify implementation but needs further analysis on application to different markets and operational impact.
- Banks must establish policies, procedures and methodologies to map RPOs to risk factors.

Data-pooling is permitted, allowing industry participants to work together on solutions that minimize the likelihood of punitive capital add-ons.

- The BCBS confirms that the usage of vendor data-pooling solutions to obtain RPOs is permissible. A series of principles is set forth that banks must adhere to when selecting vendor data for the purpose of the risk factor eligibility test (RFET).
- Data vendors must provide RPO dates, a minimum necessary set of "identifiers" to enable banks to map real prices to risk factors, and audit reports to validate real price information.
- Confidentiality-driven challenges and operational complexities still remain (e.g., price transparency and mapping to firm-specific risk factor sets).

Committed quotes can be internally sourced but must be processed through a third-party vendor and clearly evidenced.

- Committed quotes must be collected and verified through a third-party vendor, a trading platform or an exchange. No more than one RPO per day can be used for the RFET.

Trading desk requirements

Flexibility for trading desk organization may make structuring decisions easier for desks that span multiple legal entities or jurisdictions.

- To promote consistency with banks' organization of trading desks, the revised guidance allows banks to:
  - Assign an individual trader to work across two trading desks, subject to justification to supervisors
  - Appoint up to two head traders per trading desk, provided their roles are clearly separated and one has ultimate oversight
  - Assign a given trader to be the head trader at only one desk unless additional desks can be justified as a necessity to the supervisor

Seven new market data principles

Guiding principles for market data used in IMA:

- **Principle 1**: Data may include combinations of modellable risk factors; this allows for interpolation and should be consistent with mappings used for PLA (to determine RTPL).
- **Principle 2**: Data must capture idiosyncratic and general market risk.
- **Principle 3**: Data must allow the model to reflect volatility and correlation of asset prices, rates across yields curves and/or volatilities within volatility surfaces.
- **Principle 4**: Data must be reflective of prices observed in the market.
- **Principle 5**: Data must be updated at a sufficient frequency — monthly at a minimum, but preferably daily. Where regression methodology is used for backfilling or gap filling, generally data should be updated no less than every two weeks.
- **Principle 6**: Data to determine stressed ES must reflect market prices observed in the period of stress. If name-specific factors are used in ES, and the underlying data is missing in the stress period, these risk factors should be removed from the reduced set of risk factors.
- **Principle 7**: Use of proxies must be limited. Proxies must have sufficiently similar characteristics to the transactions they represent. For factor-based models, coefficients (betas) need to be empirically based and not determined based on judgment.

Principles for market data used in IMA

The BCBS's seven new market data principles for banks may have considerable impacts on time series enhancement and business-as-usual management.

- Banks may experience higher NMRF charges to reflect market data time series model inputs that do not appropriately reflect both general and idiosyncratic market risk.
- Market data quality controls and processes might need to be developed to ensure that volatility and correlation data are representative of RPOs; additional reconciliation between front- and back-office prices may be required.
- The BCBS expects the use of market data proxies to be limited; some firms with complex trading portfolios may be required to prioritize the production of extensive justification and enhanced documentation supporting the use of proxies and in some cases may be required to further capitalize proxies with an NMRF charge.
- Firms must update regressions used in proxying at least every two weeks, which may increase operational burden for banks using a large number of proxies.
- All of the additional principles may require developing periodic supporting documentation and are expected to contribute to additional operational complexity.

Banks are required to demonstrate that the listed principles are met using various techniques, some of which are outlined below:

- Regression parameters used in proxy filling
- Recovery of price from risk factors
- Risk pricing reconciliation with front-office and back-office prices
- Risk factor backtesting: forecasted returns vs. actual returns
- Periodic recalibration of risk factors generated from parameterized models

Trading book boundary

Clarification regarding structural FX exemption may enhance the consistency of application across various jurisdictions.

- Structural FX exemption language further clarifies that FX positions in foreign branches of a bank may be excluded and that the amount of structural FX positions that may be exempted from capital requirements be measured on the FX risk stemming from an investment, rather than on the amount of investment itself.

Clarification regarding equity investment in funds may enhance the consistency of trading book or banking book designation across various jurisdictions.

- For trading book treatment of equity investments in funds, the BCBS specifies the following criteria:
  - Daily price quotes are available.
  - Equity fund tracks non-levered benchmark.
  - The absolute tracking error is less than 1%.
- Tracking differences must be checked at a regular interval — annually at a minimum. Equity investments in funds, for which either no daily real prices are available or no look-through approach can be taken, must be assigned to the banking book.

Areas still requiring additional clarification

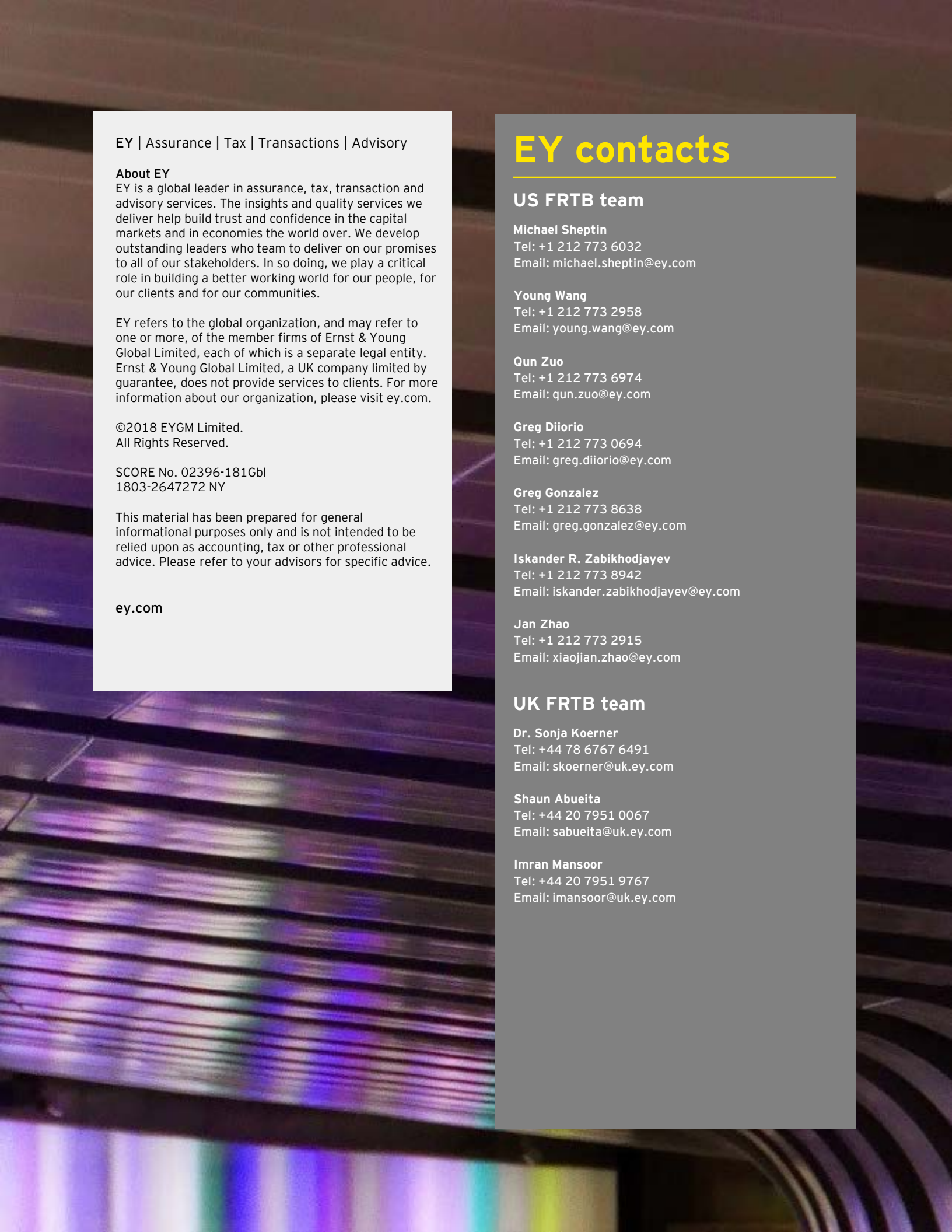
While the release of the Consultative Document and updated FAQ by the BCBS provides clarification for certain market risk capital requirements, additional guidance may be required on the following key aspects of the rule:

- Scope of the SA RRAO: May need more guidance on what should and should not be included in the RRAO, which was not addressed in the CD
- Additional granularity in the sensitivity-based method of the SA to more appropriately capture risks faced by market participants (e.g., equity index, credit index buckets, municipal buckets)
- Negative credit shocks in the SA curvature calculation for credit instruments
- Additional liquidity horizon granularity for ES (e.g., correlation risk and cross partials)
- Seasonality, standardized bucketing and aggregation of idiosyncratic equity risk all discussed, but left open for further analysis

Suggested next steps for banks

Banks should assess the impacts of the proposed revisions on their FRTB programs and their plans for ongoing implementation efforts that warrant immediate action, including:

- Updating existing rule interpretations and assumptions impacted by the proposed changes and clarifications to the final FRTB rule
- Updating RWA impact analysis and quantitative impact study calculations to reflect the updated risk weights, correlation floor, revised curvature formula and other changes from the Consultative Document and FAQ to enhance the estimate of FRTB RWA impacts at various levels (e.g., top of the house, specific lines of business, trading desks)
- Analyzing the impacts to business strategy, desk prioritization plans to pursue IMA and other capital optimization efforts
- Participating in industry discussions to develop banks' feedback to the Committee on proposed updates to the final FRTB rule
- Updating existing in-flight FRTB programs both to accelerate the implementation of clarified FRTB components such as SA, PLA and NMRF, and to plan for the new significant implementation efforts to incorporate enhanced data requirements into market data time series management processes



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