STEPS TO ADDRESS FRTB'S RFET CHALLENGE:

A GUIDE FOR DAY ONE RESILIENCY AND COMPLIANCE

PERSPECTIVES FOR THE INDUSTRY

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EXECUTIVE SUMMARY

The demands of the new Fundamental Review of the Trading Book (FRTB) standards and framework are comprehensive and costly, and they introduce significant implementation complexities for the banking sector. As a result, banks are considering whether to scale back their trading activity or, at the extreme, exit certain business lines altogether.

A less-than-comprehensive response to the FRTB's Risk Factor Eligibility Test (RFET) could exacerbate the conditions for these structural changes, thus squeezing capital flows to new investments, which may affect future growth in the capital markets.

Data is at the center of the FRTB framework and its full application. From early impact studies to model optimization and implementation, access to robust, high-quality price observation data is key to compliance with FRTB's Non-Modellable Risk Factors (NMRF) requirements. While many banks have begun their internal analyses to understand what data is needed to comply with the FRTB regulations, many have stopped short of completing comprehensive studies that fully examine available third-party data.

The potential benefits banks could realize by improving RFET results by leveraging third-party pooling data services, such as the optimization of capital requirements, may certainly be worth the investment.

BACKGROUND

Since the financial crisis over a decade ago, ensuring a more resilient banking sector continues to be a principal goal of the Basel Committee on Banking Supervision (BCBS). For the BCBS, the introduction, refinement and final implementation of FRTB is a critical means to this end.

FRTB capital requirements create stronger market risk standards and a framework that will require banks to adequately capitalize their trading activity to ensure the absorption of losses from market dislocation. Furthermore, the BCBS states that a principal goal of FRTB is to "ensure that the standardized and internal model approaches to market risk deliver credible capital outcomes and promote consistent implementation of the standards across jurisdictions."

To be FRTB compliant, banks must ensure readiness in both their front and back offices. This includes risk operations, infrastructures, quantitative modeling, and data sourcing and management.

The Depository Trust & Clearing Corporation (DTCC), a user-owned and governed global post-trade market infrastructure, was invited by the banking sector to help meet the above challenge. DTCC's FRTB Industry Design Working Group (Working Group), which includes more than 30 global banks, designed and launched a pilot version of its FRTB real-price observation pooling data service and related application.

DTCC's pilot, which will continue through 2020, is the Working Group's initial step toward establishing one of the largest concentrations of real-price observation data to assist with a bank's NMRF and RFET analysis. Moreover, the Working Group is lending its collective expertise to define technology strategies, develop operational models, and analyze existing and new data sources in order to meet head-on the RFET challenges cited below.

The RFET Challenge

With FRTB's overhaul of the minimum capital requirements for market risk, banks are now required to demonstrate sufficient market liquidity for the positions in their trading book that are capitalized using approved internal models.

A bank must test the eligibility of the risk factors used in approved internal models. In BCBS's "Internal models approach: model requirements," chapter MAR31, sections 12-14, guidance is provided for the conditions that need to be met for a risk factor to pass the RFET.

To pass the RFET, a risk factor that a bank uses in an internal model must meet either of the following criteria on a quarterly basis. Any real price that is observed for a transaction should be counted as an observation for all of the risk factors for which it is representative.

(1) The bank must identify for the risk factor at least 24 real-price observations per year (measured over the period used to calibrate the current ES model, with no more than one real-price observation per day to be included in this count). Moreover, over the previous 12 months there must be no 90-day period in which fewer than four real-price observations are identified for the risk factor (with no more than one real-price observation per day to be included in this count). The above criteria must be monitored on a monthly basis; or

(2) The bank must identify for the risk factor at least 100 real-price observations over the previous 12 months (with no more than one real-price observation per day to be included in this count).

In addition to the risk factor test, the BCBS rules also define the "bucketing approach" for the RFET. In MAR31 15-24, the BCBS specifies the allowable bucketing approaches including a bank's "own bucketing approach" and the standardized "regulatory bucketing approach." A bank's decision to select any one of the two allowable approaches to risk factor "bucketing" is largely determined by an institution's trading book and the application of a complex set of rules and formulas outlined by BCBS for their use.

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5. The requirement to use the same buckets or segmentation of risk factors for the PLA test and the RFET recognizes that there is a trade-off in determining buckets for an ES model. The use of more granular buckets may facilitate a trading desk's success in meeting the requirements of the PLA test, but additional granularity may challenge a bank's ability to source a sufficient number of real observed prices per bucket to satisfy the RFET. Banks should consider this trade-off when designing their ES models.

Source: https://www.bis.org/basel_framework/chapter/MAR/31.htm?inforce=20220101

The "own bucketing approach" decision is further complicated by the important trade-off between course bucketing versus more fine-grain bucketing. While a fine-grain bucketing approach helps a bank pass the Profit & Loss Attribution (PLA) test, its use may compromise a bank's ability to pass the RFET. See below 31.16, footnote #5, from the BCBS' Basel Framework.

To address the above RFET-related challenges, including access to Real Price Observation (RPO) data, determining risk factor eligibility, and selecting the most optimal bucketing approach, banks will need to make substantial investments. These investments should include data sourcing, mapping and calibrating real-price observations to risk factors to ensure results are optimized, while also ensuring internal infrastructures to support the sourcing and staging of real-price data for continuous RFET is met.

Pooling Impacts Using Empirical Trade Data*

A recent impact study conducted by DTCC, leveraging the data stored within DTCC's pilot FRTB real-price observation pooling data service, assessed the overall benefits of using industry pooled data. Specifically, the study analyzed the impact to the reduction of NMRF and the resulting financials using empirical trade data from banks participating in the service. From the data we derived three hypothetical bank portfolio groupings. On average, banks in all three groups realized an approximate 30% reduction in NMRF. More importantly, the real-world financial savings* ranged from $1mm to $16mm depending on the size of a bank's portfolio in a given asset class.

While the above does not consider bank-specific risk factor calibrations or a full complement of bank source data (e.g., committed quotes, internal trade data, etc.), the preliminary results demonstrate that reductions of NMRF may indeed lead to material financial savings and should be factored into any internal model approach business case decision.

To date, many banks have not considered the impact of pooled data on compliance with FRTB's internal model requirements. Banks continue to depend on regulator-mandated Quantitative Impact Study (QIS) events, which attempt to provide insights into the FRTB reforms' latest change and their net impact to both the internal model approach (IMA) and the standardized approach (SA). One such study, published by the European Banking Authority (EBA), "assesses the impact — ceteris paribus — of the January 2019 BCBS reforms related to the capital requirements for market risk."

BASEL III MONITORING EXERCISE – RESULTS BASED ON DATA AS OF 31 DECEMBER 2018 | #4 FRTB**

For Group 1 banks, the key driver under the current rules is the IMA (69%), followed by the SA (29%), while other market risk capital requirements are negligible. Under the revised rules, the proportion of minimum capital requirements calculated under IMA decreases to 50% while the SA proportion increases to 50%. In contrast, Group 2 banks currently have most of their minimum capital requirements computed under the SA (83%), with just 15% under the IMA. Under the revised rules, the SA makes up almost the entire minimum capital requirement (99%), with the IMA making up only 1%.

Figure 7: Contribution to the total market risk RWA by each calculation method before and after FRTB
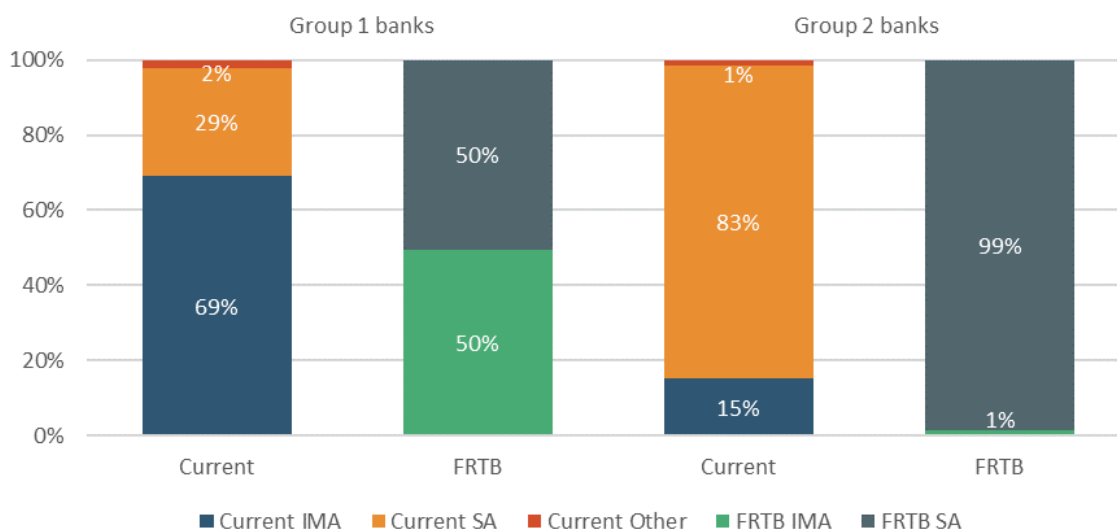
Source: EBA QIS data (December 2018); sample: 45 banks

*DTCC FRTB Data Service: Internal Data Pooling Impact Analysis Study, September 2019; The calculation to derive financial saving is an illustrative estimation based on group-specific calibration input and other empirical assumptions, including the usage of BCBS analysis, industry information and judgment.

**Source: https://eba.europa.eu/sites/default/documents/files/Basel%20III%20monitoring%20exercise.pdf, October 2019
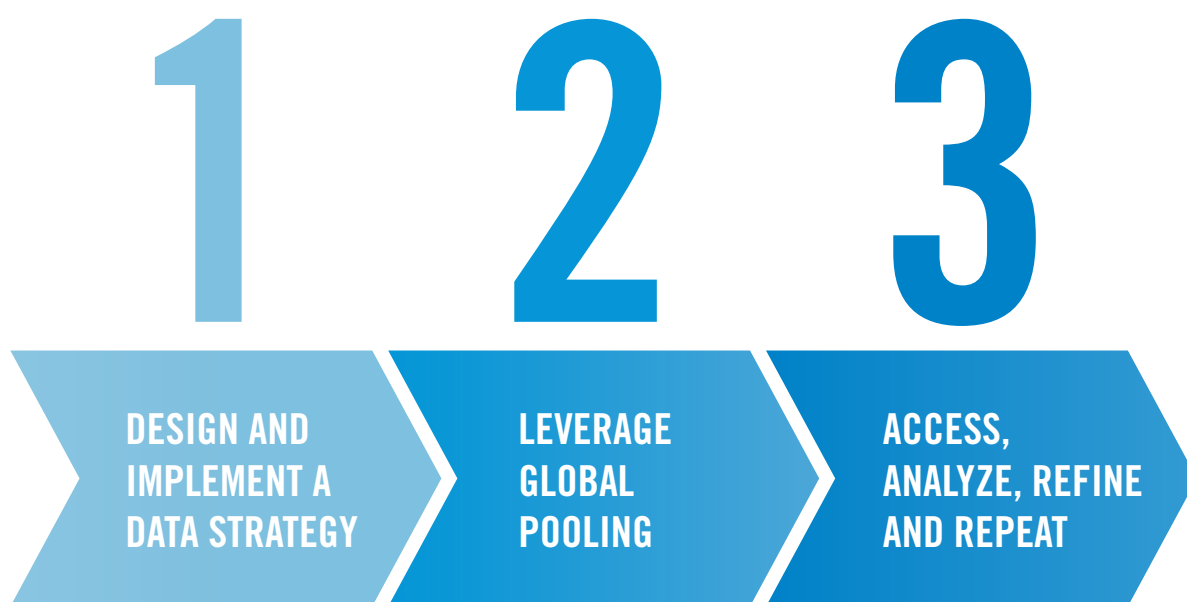
In light of the above, the banking sector should be focused on assembling an array of high-quality data sources to enable continuous and reliable diagnostics to assess the FRTB framework's impact, and to monitor RFET results. The EBA's October 2019 QIS Data results and its warning that "data quality checks revealed some issues and limitations in the information submitted by banks, and the findings should therefore be interpreted with caution" is a signal that more investment in data and tools is needed. Failing to invest early and fully to ensure robust compliance around RFET and model eligibility could have negative consequences.

Moving Toward Compliance

With the compliance deadline extended from 2019 to 2023, banks now have more time to implement their FRTB frameworks and internal models to ensure they are ready well in advance of the new compliance deadline.

As with most new regulatory regimes, compliance can be complex and require significant investments. When there is such complexity around new regulatory requirements, premature implementation and/or delays may occur. Dedicating the required capital and resources either too soon or too late can make efforts leading to compliance a constantly moving target, which can add to a bank's expense.

To help banks with their FRTB implementation, DTCC suggests this three-step guide to day one compliance.
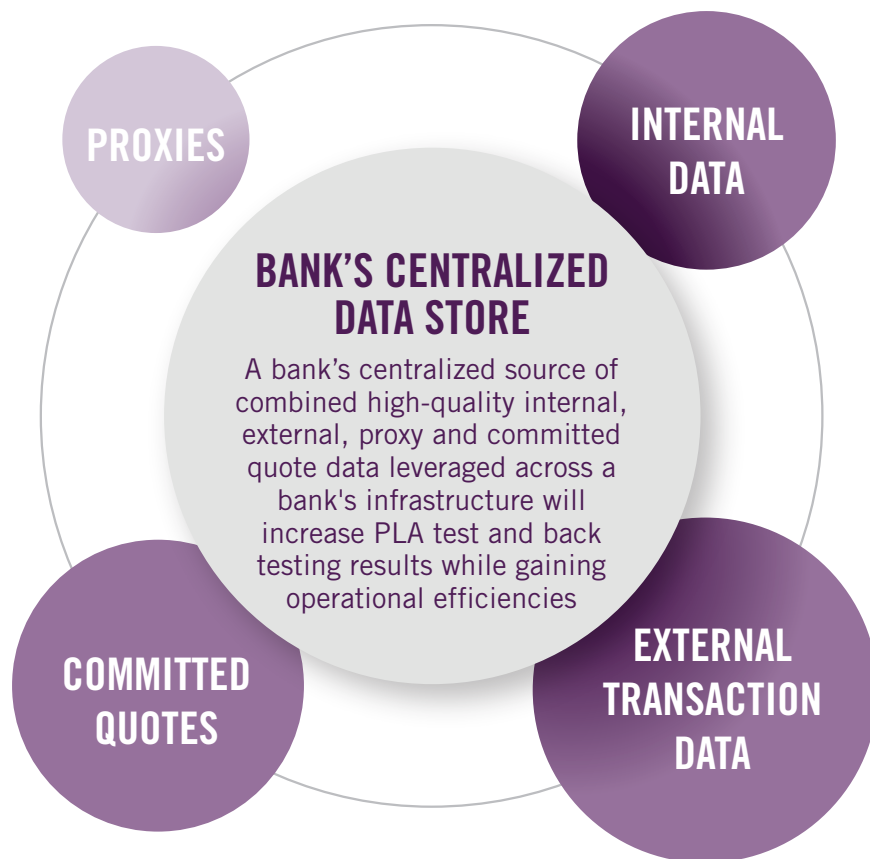
1 DESIGN AND IMPLEMENT A DATA STRATEGY

2 LEVERAGE GLOBAL POOLING

3 ACCESS, ANALYZE, REFINE AND REPEAT

STEP 1 — DESIGN AND IMPLEMENT AN FRTB DATA STRATEGY THAT WILL ENSURE COMPLIANCE AND MAXIMIZE BUSINESS RESULTS

An FRTB data strategy must be robust enough to address changes to trading patterns and business priorities over time.

Banks looking to optimize capital efficiencies under FRTB need to develop a data sourcing strategy that provides access to the deepest and widest data coverage across asset classes. Understanding comparative depth and scope is essential because trading patterns will change over time. A risk factor that passes FRTB's RFET today may not pass tomorrow due to fluctuations in bank trading over time. Likewise, risk factors not in scope today can come into scope if trading patterns or desk structures change.

Participants across the FRTB ecosystem agree that taking a practical approach to designing and implementing a robust FRTB data strategy is best. This begins with defining a process to source and manage data from banks' own internal systems. The next step is to define an ongoing process to monitor and source data to address gaps. Beyond internal data, in order of highest quality and reliability, external sourcing begins with post-trade transaction data, followed by proxy data points and/or committed quotes from third-party sources called data pools.

While this practical approach is logical, it still does not guarantee success. To raise the probability of success, an FRTB data strategy must be comprehensive and end-to-end — that is, it must include development of robust data infrastructure and processes that ensure the highest data quality standards in the sourcing of internal and external data, consider the full market data ecosystem, facilitate ongoing RFET analysis and modellability, and incorporate business diagnostics.

BANK'S CENTRALIZED DATA STORE

A bank's centralized source of combined high-quality internal, external, proxy and committed quote data leveraged across a bank's infrastructure will increase PLA test and back testing results while gaining operational efficiencies

PROXIES

INTERNAL DATA
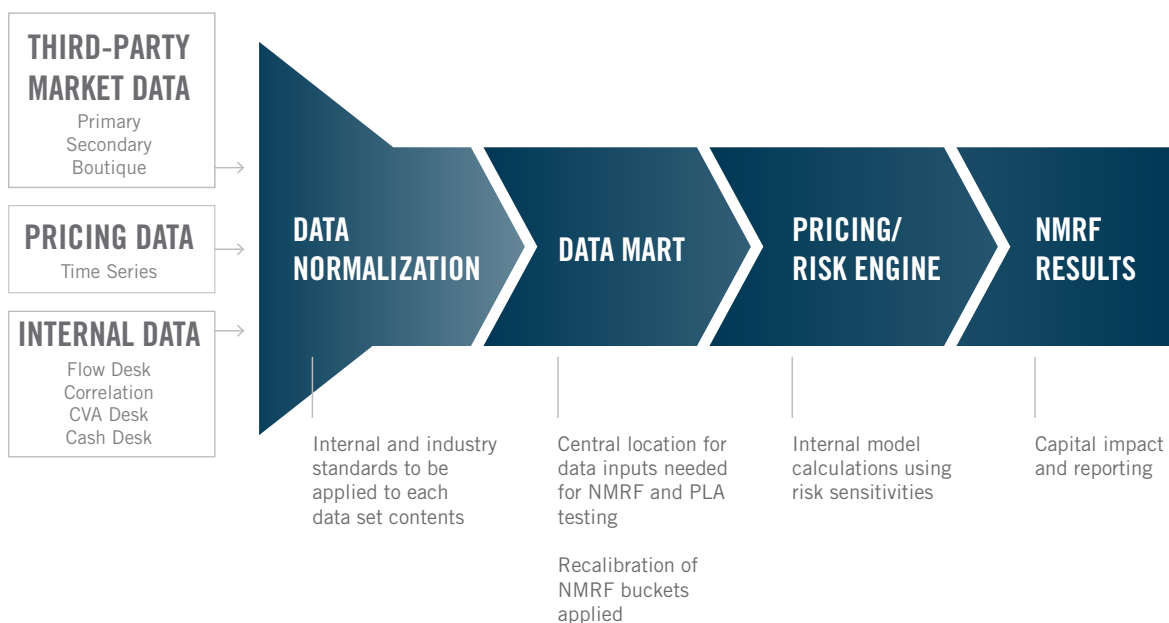
COMMITTED QUOTES

EXTERNAL TRANSACTION DATA

Many banks face challenges with respect to infrastructure and data decentralization and fragmentation. This is commonly caused by corporate life-cycle events such as mergers and acquisitions, the development of new business segments, the trading of more complex products, and the existence of multiple and often disparate risk management systems.

To address decentralization and fragmentation, banks should consider creating a centralized data store to house all their market data in a single location. With a single "point of truth," data can be used to improve PLA testing, lowering the operational risk of data reconciliation and increasing overall data quality.

Furthermore, banks should implement industry enterprise data management standards and data quality reviews to align internal data across their enterprises. This includes incorporating monitors and controls to eliminate variations and prevent incorrect data from entering their data stores, which would put modellability results at risk.

Designing, building and implementing a centralized data store that is supported by rigorous data governance will likely require a material investment in time and capital, as well as a front-to-back overhaul of banks' infrastructure systems to remove regional, functional and asset class silos where they exist. However, this investment will help yield long-term benefits and synergies beyond FRTB compliance. Banks can realize greater operational efficiency and cost savings by reducing data storage demands and centralizing data sources.

THIRD-PARTY MARKET DATA
Primary
Secondary
Boutique

PRICING DATA
Time Series

INTERNAL DATA
Flow Desk
Correlation
CVA Desk
Cash Desk

DATA NORMALIZATION → **DATA MART** → **PRICING/ RISK ENGINE** → **NMRF RESULTS**

Internal and industry standards to be applied to each data set contents

Central location for data inputs needed for NMRF and PLA testing

Recalibration of NMRF buckets applied

Internal model calculations using risk sensitivities

Capital impact and reporting

STEP 2 – LEVERAGE GLOBAL POOLING AND MINE THE GLOBAL MARKET DATA ECOSYSTEM

Banks that leverage data pools will be able to optimize the capital impact of internal modeling. Banks can position themselves to realize NMRF benefits and potential capital improvements by implementing a holistic market data sourcing strategy in addition to supporting and leveraging global pooled data coming from market infrastructures.

Since the publication of FRTB in 2016, the banking sector has been actively evaluating the current market data ecosystem with the goal of understanding how a comprehensive data sourcing strategy needs to evolve to address the current FRTB challenges. Large banks and regional banking consortia, along with market data aggregators, technology intermediaries and global post-trade infrastructures like DTCC, have collaborated in different ways to address the data challenges presented by FRTB. These collaboration efforts, including data pooling and infrastructure pilots, are needed to inform data sourcing strategy decisions.

The FRTB framework allows banks to enhance their internal data with market data from data pools. The primary value of these pools lies in improving modellability results, thus reducing banks' NMRF add-on capital charges. The three main sources of pooled and/or aggregated real-price observation data are (i) post-trade clearing and reporting transaction data, (ii) committed quotes data and (iii) proxy data.

While a bank's data pooling needs will vary based on the makeup of its portfolios, banks overwhelmingly prefer leveraging pooled post-trade transaction data to augment their own internal trade data. Post-trade transaction data is considered highly reliable in meeting the necessary criteria for a verifiable price between two arms-length parties because this data is not newly curated. It is the same information used to satisfy banks' current trade reporting requirements across the globe. For example, DTCC's FRTB Service will leverage DTCC's trusted post-trade infrastructures to provide banks with the largest concentrated global pool of OTC derivatives transactions across all five asset classes, complemented with U.S. domestic cash fixed income and equity transactions. This service can provide an "anchor" data source upon which banks can build a comprehensive data sourcing strategy.

Committed quotes are another form of real-price observation data pooled by third-party sources. While the BSBC states that committed quotes are eligible for use as a real-price observation, the conditions for use are stringent; therefore, meeting the criteria may be more challenging.

For this reason, banks prefer use of internal trades and post-trade transaction data ahead of committed quote data. Furthermore, high concentrations of committed quotes are available on instruments traded in high-volume markets or on cleared eligible securities — and not on the thinly traded or illiquid instruments for which banks seek RPOs. As a result, committed quotes in the FRTB context may represent indicative rather than real prices, thus undermining their reliability. Another challenge is auditability — because banks and vendors share responsibility to ensure a committed quote is real, failure to produce a satisfactory audit of such quotes could introduce potential compliance risk.

In addition to post-trade data and committed quotes, proxy data can greatly benefit modellability efforts as long as such data highly correlates to the corresponding risk factors. Banks will likely need to show regulators their internal analysis to support their belief that the proxy data has a highly correlated relationship to a specific risk factor they are trying to make modellable. Cash products such as corporate bonds and equities would likely be used as proxy data points.

No single data source captures all global trade activity, which underlines the need for institutions to draw upon internal and external third-party transaction data to compile the observations needed for the IMA. As highlighted in BCBS' MAR 31.12, a bank must determine which risk factors within their approved internal models are eligible to be included in the bank's internal expected shortfall (ES) model for regulatory capital requirements. Aggregating granular data across different data sources yields more observations and increases the chances of passing the RFET and modellability test.

While regulator-mandated QIS have improved over time, their outcomes remain limited in scope and scale. Use of internal and/or publicly available data sources as inputs into banks' QIS, while helpful, will not provide a comprehensive view of global market liquidity. To fully assess the impact FRTB will have on a bank's capital requirements and the industry overall, banks must have access to a full complement of real-price observations (trades, committed quotes) and proxy data internally as well as "anchor" suppliers such as post-trade infrastructures and market data aggregators.

Because no single data source captures all global trade activity, banks should consider a combination of the following three sources to optimize IMA results:
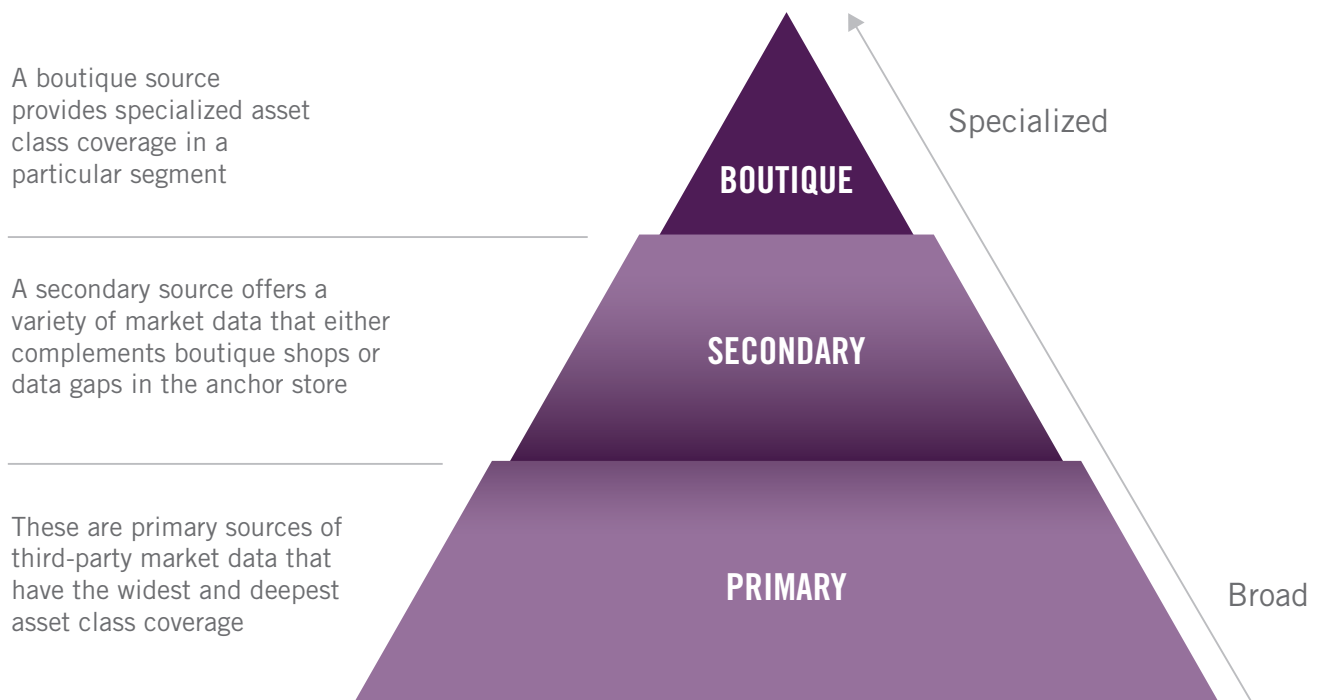- One or more primary or anchor data sources providing the widest and deepest instrument coverage
- A secondary data source
- A boutique data source

The size and complexity of each bank's trading portfolio will guide the selection, but any combination of the above data sources will certainly help optimize RFET results.

While each data source type above may be used in theory, the RPO is only real if it meets the BSBC criteria MAR 31.12. Each source will require its own unique evaluation for use eligibility and level of audit review.

Banks' FRTB data sourcing strategies also need to include routine and continuous reevaluations of gaps. A three-tiered sourcing strategy will ensure data coverage as needs arise. Whether for scenario analysis, new coverage or RPO data gap management, three sources are always better than one. A secondary data source offers a variety of market data that either complements boutique vendors or addresses RPO data gaps in the anchor source. Banks with specialized or narrow RPO data gaps will aim to engage boutique market data providers to supplement narrowly traded product categories.

THREE-TIERED MARKET DATA SOURCING STRATEGY

A boutique source provides specialized asset class coverage in a particular segment

A secondary source offers a variety of market data that either complements boutique shops or data gaps in the anchor store

These are primary sources of third-party market data that have the widest and deepest asset class coverage

BOUTIQUE

SECONDARY

PRIMARY

Specialized

Broad

STEP 3 — ACCESS, ANALYZE, REFINE AND REPEAT

To optimize return on investment using the IMA, banks must launch their continuous analysis exercise early and extend it through the life of the FRTB program.

Banks that execute a sound data sourcing strategy and choose a set of data vendors early in the process will be well positioned to meet FRTB compliance timelines. Through 2020, banks should study how their data sources will influence their IMA's capital impacts at the desk-by-desk level and/or from the top of the house.

This exercise is not a "one and done." It is crucial that banks continuously assess the efficacy of their data for IMA, recalibrating their models along the way and performing continuous evaluation of balance sheet impacts. Banks are encouraged to focus on modeling as early as possible to allow ample time to comply with FRTB. This ongoing analysis, and leveraging the highest-quality data sources, will help the banks make critical decisions about the trading strategies they employ and the markets they participate in. As a bank's portfolio shifts in size and scope, ongoing diagnostics around RFET and IMA eligibility are critical to inform FRTB and capital optimization decisions now and over the long term. Single point in time RFET, or infrequent QIS efforts, while helpful, are no substitute for executing a robust data strategy approach that provides a bank with continuous FRTB-related business intelligence.

CONCLUSION

While it is too soon for banks to predict the full potential impact FRTB compliance will have on the industry, it is widely believed that FRTB will drive up globally the amount of risk-weighted capital banks will be required to hold in reserve. The effects will be most severe for those institutions that are unable to procure sufficient and robust real-price observations data needed to pass RFET for internal models backed by a robust data sourcing and management strategy.

In order to prepare for the new market risk capital regimes, banks need to develop a data sourcing strategy and the infrastructure to access a wide breadth of data coverage across asset classes and empirical trade activity. Most banks have concluded that third-party sourced data will be a valuable complement to data captured from internal trading desks and critical to minimizing non-modellable risk factors. The business case for investing in the internal model approach can be complex even for the largest and most sophisticated banks.

For more than two years, banks have been suffering under a cloud of uncertainty on the final rules and the timing of implementation within national capital regulations. The Bank for International Settlements estimated in 2013 that banks globally could potentially see a cost increase of 15-32 billion Euros as a result of complying with new OTC derivatives reforms, including transparency regimes focused on trade reporting. While the new reforms have indeed created massive reservoirs of data, reporting derivatives transactions in and of itself solves nothing. Analyzing the liquidity and risk characteristics of such data in order to better understand the dimensions of these critical markets is the next step toward compliance with FRTB.

2020 will mark a critical inflection point in the journey toward real reform in terms of managing risk in OTC markets. If FRTB is a story of consistency and integrity in the largest and most global markets, it would be a missed opportunity if BCBS standards weren't adopted fully within each country in terms of timing and framework. While data needs to be standardized, risk is always unique to each bank. We must not forget that FRTB was born out of the idiosyncratic risks that lurked in the tails of trading portfolios that brought the world to the brink of economic collapse in 2008. It would be seriously regrettable if the net result of OTC reform was a standard approach to market risk capital allocation that failed to leverage data that banks have invested billions to create. FRTB represents our industry's greatest potential for a significant return on that investment.

For questions or comments about this paper, please contact us here.

To learn more about DTCC's FRTB service, visit DTCC.com/FRTB.