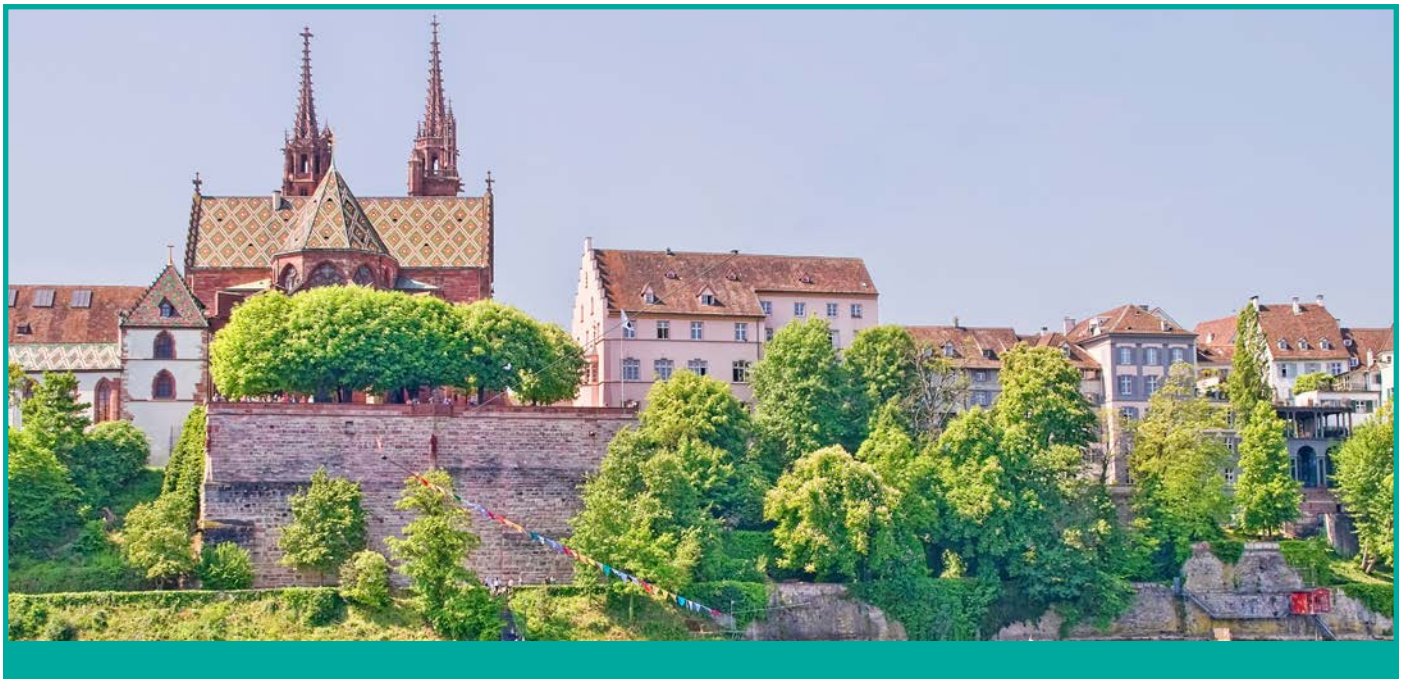

GREENPOINT RESPONDS TO FRTB CONSULTATIVE DOCUMENT FROM BCBS

WELL CONSIDERED WITH ROOM FOR IMPROVEMENT

REGULATORY PERSPECTIVES
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Submitted to the BCBS by GreenPoint Financial

We respectfully submit the following comments to the proposed revisions in the BCBS March 2018 Consultative Document

1. NON-MODELLABLE OF RISK FACTORS

Overview

We agree with the BCBS view that the approach defined for NMRFs is fundamentally sound and does not have design flaws that may lead to disproportionately high capital requirements for some risk factors relative to their risk.

Our view is that if risk factors associated with a specific instrument or an asset class are not observable, the accuracy and tractability of capital charge computations is not practicable because of the associated approximations. This would not be consistent with the underlying framework of capital charge computation that incorporates the underlying risks. In this context the lack of observability of risk factors by itself is a risk and should be compensated by an additional capital charge.

A simple analogy is that of an automobile speedometer that becomes episodically foggy and unreadable. The driver's judgement would be impaired when the speedometer is unreadable and therefore additional braking power or other safety measures would be advisable. The first question here devise an objective measure for quantifying the fogginess, how much would it impair a driver's ability as well as additional barking capability and additional measures.

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In this sense, the underlying question is not whether a fundamental flaw exists in the conceptual framework of modellability but rather whether an observability test has identifiable criteria and is practically feasible.

With this premise we delve into the specifics of the recommendations for NMRFs and address the specific questions below:

1. Modellability requirements and internal model calibration

The CD proposes to add the provision that a price would be considered observable if it is obtained from a committed quote made by (i) the bank itself or (ii) another party. The committed quote must be collected and verified through a third-party vendor, a trading platform, or an exchange.

Comment/Recommendation

1. For RFET, this makes the observability criteria more flexible and includes the concept of a committed quote. However, the market norms for a committed quote generally apply to liquid, high-volume markets where a committed quote can be executed instantly if there is a willing buyer. The principal issue here is that the challenges of price observability generally exists in markets where transactions that are OTC or where volumes may be thin. In these markets, the quotes may be "indicative" rather than committed.

2. For a committed quote, the auditability requirement for data vendors would be a challenge as they are currently not geared for this. In the current environment if a quote fails the audit test, then the rule being proposed is that a bank may not use that vendor as an observable price source for that risk factor. This requirement will lead to logistical hurdles because in the current environment data vendors largely operate on a best-efforts basis as "information collection and pass-through agents," and the failure of an auditability test by the vendor is ultimately a bank's responsibility. In addition, there is the question of the definition of an audit test failure, is it one strike and you are out? Or would there be other considerations.

We suggest that the ***BCBS consider guidelines regarding the audit test and failure thresholds and circumstances for jurisdictional regulatory and supervisory bodies as frameworks/guidelines to adopt***.

2. RF bucketing

In the March 2017 CD, the BCBS proposed flexibility for banks by using a bucketing approach to count "real" price observations for REFT and suggested two alternatives: (i) banks establish their own buckets for its RFs subject to broadly defined guidelines or (ii) the BCBS specifies the buckets' framework based on minimum standards.

Comment/Recommendation

Our view is that ***allowance for RF bucketing is desirable and will address a significant proportion of price and risk factor observability***. However, the allowance will present challenges for supervisors to have yet another framework to observe and approve.

The choice between the two proposed alternatives is difficult to make. We are in favor of the first alternative based on the following:

1. The overall framework for FRTB is already considered to be overly complex by the industry, and for good reason. As it stands now, FRTB has comprehensive criteria for price observability when in current data frameworks there are inadequate mechanisms for flagging missing historical data points associated with a plethora of gap filling algorithms at banks and data vendors. In most cases they fit the bill and are generally adequate for ensuring continuity if there are sporadic missing data points.

2. A new prescription for how data points can be bucketed in a standardized format would impose another layer of complexity for banks that are already struggling to overlay a new step in the data extraction and management process.

We suggest a balanced approach across the two alternatives. ***Banks should be permitted to establish their own buckets for specific instruments and associated classes but with minimum standards that are not prescriptive but provide more detailed requirements than currently suggested.*** This may include minimum dimensions across maturities and expirations. The general goal of minimum standards for risk factor

bucketing should be to allow the supervisors to set appropriate jurisdictional guidelines.

3. "Real price" and data principles

To ensure that the data used for model calibration are consistently robust across banks, BCBS has proposed seven principles to which banks will be expected to adhere when selecting data to calibrate their models and to demonstrate that the data used ("real" price observations and/or other sources of data) in the ES model are appropriate.

Comment/Recommendation

The addition of these principles over and above tests for modellability and P&L attribution is already a "belt and suspenders" approach that should ensure that front office and risk models and in alignment and reflective of historical prices/risk factor values. A failure of the NMRF test would emanate from missing or mislabeled data and that of the P&L attribution is a robust test for the validity of the models as well as data. Are these principles necessary over and above what banks already have? Notwithstanding the fact that supervisors must ensure that banks are adequately capitalized vis-à-vis the underlying risks of their trading portfolios, banks should be vested with the basic and credible trust that they themselves will not violate basic tenets of quantification of risk.

Secondly, most of the prescribed principles are already well founded in banks' risk management frameworks: (i) data are updated at sufficient frequency, (ii) data are reflective of prices observed and quoted in the market, (iii) data reflect the volatility and correlation of risk positions, and so on. We would emphasize that by ***merely picking a historical price-time series most if not all principles are adhered to by default***. The second question is the situation where a bank or an RTD has demonstrated adherence to the principles and fails the NMRF or PLA test or vice versa.

Our recommendation is that ***the proposed principles be selectively removed from FRTB requirements or reworded to exclude the requirement for demonstrably testing adherence to them*** because it adds to the general perception of FRTB as an onerous logistical challenge.

4. Seasonality of certain markets and observability of "real prices"

Excerpted from FRTB Concepts and Implementation (Forthcoming, Summer 2018 RISK Books, Sanjay Sharma and Jeb Beckwith)

"While the FRTB framework for NMRFs is conceptually sound, in can result in high and sometimes punitive capital charges. These charges can swiftly render well-hedged, low risk and profitable strategies, positions and trading desks sub-optimal from a return on capital perspective. It can lead to a strong disincentive for banks from holding and trading positions that are within their risk appetites but would be challenging to operate and manage because they can become episodically illiquid with uncertain associated capital charges. This would apply even if the position is well-hedged from a risk management perspective.

At the same time, FRTB's rationale for requiring banks to hold higher capital for illiquid positions that may be seemingly so – or approaching a defined threshold – is rational. The requirement that a trading book position demonstrates 24 verifiable trades or committed quotes per year is arguably reasonable. However, this requirement as a bright line test may result in false NMRF positives and a negative feedback loop that would be detrimental to thinly traded securities with sound risk profiles. In addition, the requirement that risk fact or history available for at least one year will hinder creation/extraction of new RFs from newly created sensitivities and instruments.

The thrust of FRTB is to derive IMA RFs from real evidence of existing markets and related information is clearly justified. Its motivation with respect to modelability of RFs is to avoid situations where indicative quotes contribute to a wrong or misplaced representation of prices, e.g. for a specific corporate bond there may be a several quotes available on a trading venue, but an actual trade may occur at a substantially different price. This was commonplace during the 2008 GFC where quotes for individual bonds, particularly those that were structured or bespoke were wholly unreliable for trading, marking or valuation in general, let alone for extraction or derivation of RFs. FRTB's motivation is for banks and regulators to have access to frequently, if not continuously, observed market data for volatility

estimation to be reliable. If this is not the case, particularly so in illiquid markets price discovery becomes stale resulting in underestimation of volatility.

- **Definition of "real price"**

Implementation of the IMA approach requires that the observability of all RFs of internal models must be assessed and classified as modellable or non-modellable. The concept of modelability is linked to the ability to observe price data of sufficient quality and frequency - and hence to the liquidity of instruments linked to the specific RFs. The main thrust of the modelability assessment is to demonstrate that historical RF values are observable and can be verified objectively based on "*continuously available real prices for a sufficient set of representative transactions*"[1] during the previous year.

As enumerated earlier in this chapter, FRTB prescribes two tests for demonstrating that the market price or value of an RF source instrument is realistic and reliable. The test requires real price of a transaction or a committed quote. Unlike liquid markets where transacted prices are continuously visible and these criteria can be continuously met, for illiquid instruments and markets, the test for observability is hard to design and satisfy consistently, e.g. the committed quote criteria could not be made subjective as it would be ripe for intended or unintended misrepresentation.

The visibility provided by a recent transaction is clearly a reliable indicator, but a committed quote can be hard to solicit without a buyer who is in the market for the position. The requirement of a committed quote can be easily abused. A group of trading desks at separate banks could maintain an environment where informally committed quotes are continuously available, checking off the observability criteria without executing a trade in a round-robin fashion.

An alternative for FRTB is to consider alternative criteria for observability that focuses on the depth of the market for an instrument or asset class. This can be observed through the number of active market makers who have provided pricing indications – committed or uncommitted. The underlying supposition is that the number of distinct participants would be a better indication of an executable trade vs. a single "committed quote" that may not always be a legal obligation committed to execute the trade.

- **Frequency of "real price"**

The current prescription of 24 observations per year and two per month is not unreasonable. However, the rationale for this being a bright-line test is not clear, i.e. no empirical evidence or other justification is provided in FRTB for this choice. BCBS should consider providing more flexibility to jurisdictional supervisor for this with the minimum thresholds at for instance 12 observations per year and one per month. This flexibility would enable several instruments and markets to exist and possibility grow without inordinately sacrificing the observability criteria.

- **Liquidity horizons for SES**

FRTB prescribes that for modelling the NMRF stress scenarios, assumed liquidity horizons should be the larger duration of the liquidity horizon defined for computation of ES for modellable RFs, and "longest time interval between two consecutive real price observations" of the prior year. This requirement is logical, in that if an RF is not observable for an extended period of time a conservative assumption should be applied for the holding period of the underlying trading instrument(s) for capital computation. However, its interpretation and implementation can be challenging and onerous for the computed capital charge.

An RF can become unobservable because of several reasons, including:

1. Trading in instruments from which the RF is derived may become scarce because they are increasingly owned by buy-and-hold accounts, e.g. insurance companies;

2. Already low trading frequency in the specific instrument may cease because of externalities, e.g. there are several markets that exhibit seasonality in trading volume patterns that can lead to absence of specific observations for extended time periods generally related to summer and winter vacations.

3. On the surface, the requirement for 24 transactions per security/instrument is reasonable for liquid instruments and markets. However, in some markets it can pose

challenges that stem from several underlying factors. Some markets have seasonality, e.g. trading frequency of European corporate bonds drops during summer months making a significant number of individual corporate bonds challenging for passing the modelability test. In other situations, with buy and hold investors a specific issue of a corporate bond with a unique ISIN may not

4. An instrument with idiosyncratic risks and associated RF is not traded for an extended period of time because market participants are concerned about its risks or the underlying quantitative algorithm for pricing it. From a practical perspective, it is this reason for absence of RF observability that should garner caution and a conservative approach for the holding period assumption for computation of capital charge.

The one-size fits all standard for liquidity horizon can lead to misapplication of conservative standards for unobserved or non-existent real prices. In addition, there are several practical challenges in the application and implementation of this methodology. An illustration is provided below.

Consider a hypothetical time series of "real price" observations are provided for a thinly traded BBB- rated bond with CAD $100 million principal and 10-year maturity. The issuer has relatively small amount of overall debt outstanding. The bond was underwritten by a large Canadian bank and offered two years before the current month. It was marketed and sold to institutional investors and was traded in small volumes over the first 18 months after issuance. Subsequently, it was put in buy-and-hold accounts with CAD $5 million remaining in the trading books of 3 banks. All three banks use the market price of the bond as the source for extracting the credit spread RF. Assume that the bond credit spread is idiosyncratic and given its small exposure the bank has elected not to create proxy algorithms. It is currently classified as non-modellable. The progression of observable LH is described in 4 stages below.

1. The illustrative time series shows that two prices per month are observed for the prior one year, thus satisfying the observability criteria, making the bond modellable under IMA. However, the bank cannot elect this methodology as the RF does not yet have one-year history of RF observation with a floor liquidity horizon of 40 days as prescribed in FRTB.

2. In Month 13, the RF becomes modellable under IMA with 40 days as the floor LH as prescribed under FRTB. The observability test fails over the prior six months as the bond is not traded and the credit spread RF is classified as NMRF after two months of non-observability in month 20.

3. The next trade of the bond occurs in month 23, followed by a trade in month 36. The observation and liquidity horizon assumptions across the time period are described in Table X.

4. In month 20 when Trade Y is observed, the LH increases to 60 days and jumps to 180 days when the next trade occurs in month 24. This is not rational because a new price observation reflects new information about the RF, and yet causes the LH to jump three-fold.

A logical approach for NMRF LH would be to average the time horizons on a rolling 12- or 24-month basis with the ES LH for modellable RFs as the floor. This will prevent sudden jumps in capital charge for an instrument with the same RF stress scenario. A weighting scheme that allocates higher weights to more recent observations could be applied as well. The weights can be linear or exponential at the discretion of jurisdictional regulators."

B. STANDARDIZED APPROACH

1. Revisions to SA risk weights

The most significant proposed modification to the SA approach is a substantial reduction in risk weights for the general interest rate risk class (by 20–40%), and equity and FX risk classes (by 25–50%). However, no specific revision is proposed to the risk weights applied for the credit spread and commodity risk classes. BCBS will determine the final recalibration for all risk classes based on further analysis of impact data provided by banks, as well as feedback provided to this consultative document. Upon finalisation of recalibrated risk weights, BCBS may also consider making corresponding changes to risk weights used in the SA-CVA risk weights.

Comment/Recommendation

The proposed reduction in the risk weights is a warranted based on our trade-by-trade impact analyses across typical IMA and SA approaches and risk classes. ***However, we would recommend that BCBS provide some justification for risk weights that is based on relative historical volatility of risk classes during market stress period and 10-25 year averages across markets.***

2. Correlation Parameter

BCBS has observed that the results produced in the "low correlations" scenario are more conservative than empirical data resulting in excessively conservative SA capital charge and proposes revisions to the parameters. Values for the correlation parameter ρkl (correlation between risk factors within a bucket) and γbc (correlation across buckets within a risk class) in the January 2016 rules are proposed to be replaced by are replaced by $\rho_{kl}^{low} = max(2\times\rho_{kl} - 100\%; 75\%\times\rho_{kl})$ and $\gamma_{bc}^{low} = max(2\times\gamma_{bc} - 100\%; 75\%\times\gamma_{bc})$.

We examine the impact of the new correlation parameters for simulations across all seven risk factor classes. We assume that risk positions within the buckets follows multivariate normal distribution with prescribed correlation, as well as those under the same risk class. We have also modeled specific instruments and mapped them into buckets to obtain prescribed parameters associated with buckets.

Simulation results using current and proposed definition of "low correlation" parameter

Risk Factor Class	Correlation Parameter	Error Using Current Standard	Error Using Proposed Standard
General Interest Rate Risk (GIRR)	ρkl	-0.3193	-0.2106
	γbc	-0.6053	-0.6053
Credit Spread Risk (CSR): Non- securitisation	ρkl	-0.8123	-0.8129
	γbc	-0.6063	-0.6063
CSR: Securitisation Non-CTP	ρkl	-0.7437	-0.7437
	γbc	-0.9814	-0.9814
CSR: Securitisation CTP	ρkl	-0.8116	-0.8116
	γbc	-0.6066	-0.6066
Equity Risk	ρkl	-0.7933	-0.7933
	γbc	-0.8682	-0.8682
Commodity Risk	ρkl	-0.2816	-0.1072
	γbc	-0.8701	-0.8701
Foreign Exchange (FE) Risk	γbc	-0.5311	-0.5311

Our results suggest that both the current and proposed standards are more conservative than "empirical" data for both correlation parameters. Also, we find that for most risk factor classes, the results generated from old and new methods for both correlation parameters are generally similar. The only significant difference is for ρkl of General Interest Rate Risk and Commodity Risk, with less conservative result generated from the new method.

Our results (based on a narrow and simulated study) suggest that it is not clear if the proposed standard would effectively address the conservative results in the low correlation scenario. ***We recommend that more analysis by performed by BCBS with actual historical data and published before adopting the proposed standard***.

We are grateful to Xiaoshan (Angela) Lin from Fordham University for creating the data models and performing the simulations.

1. BCBS d352, section 183 (c)