Norah Barger & Karl Cordewener, Co-Chairs, Trading Book Group
Ju Quan Tan, Member of Secretariat, Basel Committee on Banking Supervision
Basel Committee on Banking Supervision - Bank for International Settlements
Centralbahnplatz 2, CH-4002 Basel, SWITZERLAND

Sent by email to: norah.barger@frb.gov; karl.cordewener@bis.org; Juquan.Tan@bis.org; baselcommittee@bis.org

Re: Second Consultative Document Fundamental Review of the Trading Book[1] - BCBS 265 – Non Modellable risk factors framework

Dear Ms. Barger, Mr. Cordewener and Mr. Tan

This letter contains a further response of the International Swaps and Derivatives Association ("ISDA"), the Global Financial Markets Association ("GFMA") and the Institute of International Finance ("IIF"; jointly referred to as "the Associations"), to the Basel Committee on Banking Supervision ("BCBS") regarding the Consultative Document on the Fundamental Review of the Trading Book ("FTRB") dated October 2013. This paper should be read as part of the previous industry response on the subject[2].

Industry notes that the quantitative impact study ("QIS") on the Internal Model Application ("IMA") that was carried-out in April 2014, as prescribed by BCBS in the context of the FRTB, was informative in many respects. However, the industry has formed a view that the definitions of non modellable risk factors warrants further elaboration to ensure that the boundaries between modellable and non-modellable risk factors are set appropriately. The objective of this letter is to provide a number of suggestions with regards to the definition of non-modellable risk factors as set out in the FRTB proposal, so that:

- it allows risk to be properly captured in IMA without unintended one-sided risk capture issues

- it avoids serious cliff effects due to small changes in market and data conditions at or near the boundary

- it avoids an unnecessarily tight timeline to incorporate immaterial risk factors into IMA thereby diluting the focus on the capture of material risk factors; and

- it does not inadvertently lead to a significant unintended reduction of the scope of the IMA.

Without any doubt, the definition of non-modellable risk factors has numerous competing dimensions that contribute to its high level of complexity. In spite of this, the Associations hope that the suggestions herewith can assist the BCBS Trading Book Group ("TBG") in developing a more robust set of rules for the IMA.

The current BCBS text on non-modellable risk factors is prescriptive and very rigid to the extent that its strict interpretation and enforcement would prevent the appropriate use of data (e.g. Markit) and modelling practices that are currently accepted by both the industry and regulators. In this paper, we:

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[1] Basel Committee on Banking Supervision, October 2013
[2] http://www2.isda.org/attachment/NjIwMw==/060114_Joint%20trade%20letter%20to%20TBG%20final.pdf, January 6th 2014,

1. Present a set of overarching principles regarding the modellability of risk factors;

2. Based on such principles, highlight some practical issues and inconsistency with the current FRTB proposal; and

3. Recommend that TBG consider clarifying the rules to be consistent with these principles.

In addition, the Associations would like to emphasize that with many issues still in the process of being addressed or clarified, a rush into a full portfolio QIS can only yield low quality and potentially unrepresentative results that are of little use for studying the impact of the FRTB proposal and to calibrate the approach.

In terms of structure, the first section of this paper sets out the industry's proposal for a principle based approach, based on industry's experience and practice with data quality/availability and illiquid risk factors. In the second section we build upon the proposed principles and provide practical considerations to enrich the understanding of the topics raised herein.

As a final note, we wish to reiterate that we are in broad agreement with the objectives of the FRTB framework and the points we raise should be viewed as constructive feedback with the objective of a more informative QIS and better calibration of the methodology. As such, we would greatly welcome the opportunity to discuss further with you the issues set out in this paper, in anticipation that you will find our input helpful and constructive.

Yours faithfully,

Mark Gheerbrant | David Strongin | Andres Portilla
Head of Risk and Capital | Executive Director | Director, Regulatory Affairs
ISDA | GFMA | IIF

SECTION I: PROPOSAL FOR PRINCIPLE BASED APPROACH

A) Introduction

The industry believes that an inappropriate definition/treatment of data quality and illiquid risk factors will lead to poor commercial choices based on risk insensitive regulatory capital measures. In this paper we consider data quality in a broad context to address the key concepts in deciding whether risk factors are indeed non-modellable and therefore should be treated independently from the rest of the model or whether appropriate use of existing data and proxies with relevant add-ons will lead to better calibration of the risks in the overall modelling approach.

During the last 3-4 years institutions have concentrated their efforts and internal resources into developing more systematic and sophisticated methodologies for the identification and quantification of risks that are not captured by their Value at Risk (VaR) frameworks, including the ones used for the IMA. At the same time, a conscious regulatory decision was made to treat these risks conservatively from a capital requirement perspective and, as such, to many firms the Risk-Not-In-VaR ("RNIV") requirements can represent a material proportion of the IMA capital. This decision has been instrumental for setting the right internal incentives for allocating investment budget to modelling enhancements, so that the VaR framework can capture a broader set of risk factors. Were the capital rules to become overly restrictive in this regard to the point that the scope of risk factors that can be captured by IMA VaR models is limited, this process will be reversed and banks are bound to adapt their commercial choices to this risk-insensitive state.

We believe that further clarifications and improvements could be made to the Non-modellable Risk Factor Framework within the FRTB. We agree that there needs to be a focus on the data quality and integrity within risk models (e.g ES time series completeness, appropriateness and validation), but also believe that a strict interpretation of the provisions on risk factor analysis could lead to serious unintended consequences, such as one sided risk capture and volatility of the modelling results for less liquid risk factors that are near the data quality boundary.

In this paper we propose certain overarching principles for the treatment of illiquid risk factors. We believe that they are aligned with TBG's objectives and would help ensure a robust and practical approach to addressing data quality/availability and illiquid risk factors. This paper forms industry's initial input on these principles and, as we gain more experience on the FRTB framework, these principles could be further refined. Without any doubt, our members would welcome an opportunity to work with the TBG on this topic to refine the framework.

 At this early stage, the industry has identified the following areas that stand out from the current text on non-modellable risk factors that would benefit from a dialogue:

1) Further redrafting/clarification and discussion with the industry is needed to ensure a practically executable framework with the desired consequences;
2) The proposed capital treatment of non-modellable risk factors, as written, is rigid and could lead to cliff effects and unintentional broadening of the RNIV scope, which we believe is risk insensitive and punitively conservative; and
3) Desk eligibility tests as proposed in FRTB set strict governance in place, which ensures banks have to model their P&L as accurately as possible.

B) Overarching principles on modellability of risk factors

We strongly advocate that the standards on what constitutes good historical data, such as quality (real transaction prices etc.) and frequency, should be deemed sufficient but not necessarily pre conditions for the modellability of a risk factor. The argument is set out below.

Currently, most risk models use historical data to calibrate model parameters such as volatilities and correlations (or apply the historical return or rate change onto today's market data). However, a risk factor that has a "real price" today but insufficient historical "real price" data is not necessarily deemed to be non modellable (in this context, the industry is generally concerned that Markit data which is useful in understanding the distribution of corresponding risk factors would not be allowed based on the real price criteria as noted in the FAQ).

For example, a bond without good historical data could well be reasonably modelled by observing behaviors of bonds with similar maturities in the same region and sector, either through proxying, bucketing or leveraging factor models that are calibrated using variables with good historical data.

A similar approach applies to IPOs. While there is no historical data for the particular issuance, one can start by using a similar company or an industry average with good data as a proxy or alternatively by invoking a factor models calibrated with rich data for a sufficiently long period. This can then be augmented and gradually replaced by the accumulation of real data going forward.

The degree of model uncertainty or model risk in these cases where reasonable relationships can be leveraged upon are typically not material enough to have these risk factors excluded from the IMA measures altogether. In fact, the risks or distortions that would occur if these risks are excluded from the IMA may create incorrect asymmetric exposures, causing irrational behavior of the IMA measures.

Our principles are that a risk factor can be included in a modelled risk measure if there are:
- o reasonable proxies with good data; or
- o statistical models which can leverage relationships with other variables with good historical data; or
- o reasonable parameter "proxies" such as volatilities based on finance/economic reasoning or parameters of risk factors with similar characteristics and supporting empirical evidence.
- o Exposure to potential missing risk is measured, monitored and captured.

All of these cases can be further augmented by a degree of conservatism if needed, by for example adding idiosyncratic noise or volatility scale up or some other form of fat tail distribution overlay.

Risk factors that are subject to a lot more model uncertainty are those with no close proxies or relationships with other observable risk factors that can be leveraged. For instance, proxying a very long dated volatility with short dated volatility is a kind of "extrapolation" that carries more model uncertainty than using interpolation to infer a 3 year volatility from observed 2 and 4 year volatilities. Perhaps, the

focus should be on model validation and model uncertainty as oppose to disallowing the inclusion of certain risk factors based on rigid criteria.

For risk factors that have a real price today but insufficient historical data to derive model parameters (or to obtain the return to apply on today's real price – from the angle of a historical simulation), we believe that an alternative approach for parameterization should be allowed (subject to appropriate validation and governance structure). These alternative approaches may include:

i)   Conservative estimation based on historical data of other (similar) risk factors. [For example, set a small cap IPO stock's volatility to a level higher than typical small cap stock volatility, until long enough historical data has been accumulated for this IPO to allow calibration of its own volatility].

ii) Expert judgment (for example, from the independent risk management). In highly specialized products or local markets, volatility measure for risk factors can be based on the knowledge of an expert in those products/markets. In some cases these judgments may be used to deliberately deviate the parameterization from historical data – [for example, the FX risk of a pegged local currency is zero based on historical data, but a Local Risk Manager may anticipate a non-zero volatility and use it to measure the FX risk in VaR or ES].

iii) Use of add-ons to the IMA measures could be a way to enhance safety. In general, it is preferable to retain such risk factors in the IMA measures to avoid one sided exposures and potential instability due to the cliff effect in the event a risk factor is forced to a status change between modellable vs non-modellable due to relatively small changes in quality or frequency of data points. To elaborate further on this, under the proposed BCBS rule, a risk factor without 24 observations available in a year would be considered non-modellable. We believe that in case the number of observations just dropped down to for example 23, it would be unreasonable to make a drastic change by moving the risk factor from modellable to non-modellable category with potentially very large impact on the IMA. Such a threshold is appropriate, however, as a point beyond which an assessment of potential missing risk is required. The use of an add-on that is proportional to the amount of model uncertainty could eliminate such cliff effects and set proper incentives for model enhancements.

SECTION II: UNCERTAINTIES AND PRACTICAL CONSIDERATIONS

The FRTB (BCBS265, October 2013) defines non-modellable risk factors as those risk factors that do not qualify as "modellable". Note: The consultation paper asks for time series going back to 2005

There are 3 key pieces to the non-modellable rules these have been set out below with accompanying feedback from the industry group.

A) **The language in the BCBS FRTB paper attaching to real prices and observation frequency ("The identification of modellable risk factors", pg27) is as follows:**

"For a risk factor to be classified as "modellable" there must be a sufficient set of representative transactions in relevant products to allow for an appropriate historical data series for the factor. Sufficiency relies on the prices being both "real" and available at an acceptable frequency.
In this context, the Committee considers a price to be "real" if:
• It is a price at which the institution has transacted on an arms-length basis;
• It is a price for an actual transaction between two other (independent) third parties;
• The price is taken from a firm (transactable) quote.
To be considered modellable, a risk factor should have at least 24 observations per year, with a maximum period of one month between two consecutive transactions."

Comments from the industry group:
i)   In the context of Market Risk models, as discussed in the overarching principles on the modellability of risk factors, we understand available prices of representative transactions and modellability of risk factors to be two separate concepts. We think this could be made clearer in the FRTB. By jumping between the concept of a continuously available "real" price and an modellable risk factor, the FRTB could be open to different interpretations and/or lead to confusion. It has been assumed that the criteria attach to the allowable market data quality for the purpose of modelling a risk factors ES.
ii)   There is no way to retrospectively establish which market data meets the real price criteria. We would like to clarify that the intention is only to apply the criteria on a forward looking basis. As discussed in the previous sections, an overly restrictive modellability requirement can create unintended one-side risk capture issues, which compromise the risk sensitivity of the IMA and the incentives set forth by the RNIV framework.
iii)   It is unclear if the 24 observations per year criterion is to be based on the 1 or 10 year observation period. If it is for the 10 year period, a great many time series will fail unless sensible approaches can be adapted to patch or backfill missing data with conservative proxies.
iv)   The real price criteria can be sensibly considered with respect to common equity prices, FX rates and commodity prices. However, other commonly used market data does not cleanly fit within the existing definition. We do not believe it is the intention of the BCBS to preclude the use of data listed below, so would recommend some modification of the wording:

Data type	Description	Real Price Criteria Met?
Equity prices, FX rates, commodity prices	Prices available daily on exchanges, quoted directly	Yes
CDS spreads	Reliable spread data available daily via Markit, but according to QIS FAQ this may not be considered as non-modellable	Needs further clarification
Prices of OTC derivatives	OTC derivative prices (used to derive implied volatilities, for example) will be based on broker quotes for typical trade sizes. Would these be classed as 'real price data'?	Needs further clarification
Yield curves	Calculated based on a model on top of traded instruments and used as an input to pricing models	Needs further clarification of wording
Indexes (non-traded)	Calculated based on a model on top of traded instruments	Needs further clarification of wording
Vol surfaces	Data implied from the market price using a model (ie. implied vol)	Needs further clarification of wording
Correlations	Calculated between 2 underlying series, not evidenced directly from a trade	Needs further clarification of wording
Pricing model parameters (skew etc)	Proprietary model parameters calibrated to market environment and used in pricing. Can cause P&L movement when re-calibrated.	Needs further clarification of wording

v) Under the current regulatory regime, one might utilize factor model / residual to capture specific risk. Can we clarify that the intention is not to exclude them, or this type of modelling. As discussed, such modelling approaches are currently accepted by both industry and regulators. An abrupt disallowance of such approaches could lead to many unintended changes in the quality of the capital measures.

B) The final point of paragraph 183c sets out timeframe for including modellable risk factors into the ES model.

"Some risk factors that would be considered modellable under the above criteria may be temporarily excluded from a bank's firm-wide regulatory capital model. In these circumstances, the bank will be given [12 months] to include the relevant risk factors in the regulatory capital model."

Comments from the industry group:
- For RNIVs the group felt there should be no set timeframe for mandatory inclusion of a modellable risk. Aligning to the current RNIV framework, risk captured via a stressed scenario will be more conservatively capitalised and that incentives banks to include in ES. A rigid time

frame without factoring in materiality could mean insufficient time spent on large risks as much effort also needed to be put into capturing immaterial risk.

C) Paragraph 190 sets out the calculation of stressed scenarios for non-modellable risk factors

Each non-modellable risk factor is to be capitalised using a stress scenario that is calibrated to be at least as prudent as the expected shortfall calibration used for modelled risks (ie a loss calibrated to a 97.5% confidence threshold over a period of extreme stress for the given risk factor). For each non-modellable risk factor, the liquidity horizon of the stress scenario should be the greater of the largest time interval between two consecutive price observations over the prior year and the liquidity horizon assigned to the risk factor in paragraph 181. No correlation or diversification effect between non-modellable risk factors should be assumed. In the event that a bank cannot provide a stress scenario which is acceptable for the supervisor, the bank will have to use the maximum possible loss as the stress scenario.

The aggregate regulatory capital measure for K risk factors in model-eligible desks that are deemed unmodellable (SES) is:

$$SES = \sum_{j=1}^{K} SES_{NM,j}$$

Where SESNM,j is the stress scenario capital charge for non-modellable risk j.

Comments from the industry group:
- Reasonable correlation and diversification benefit between non-modellable risk factors should be assumed. This would be restricted to a greater extent than ES, but not altogether. For instance, identical risk factors in all regards accept neighbouring tenors where exposures offset. Netting would be allowed in RNIV and should be allowed here.
- Where it is possible to calculate a stress scenario calibrated to the period of stress resulting in maximising the bank's total ES, this should be acceptable rather than stress scenarios calibrated to separate stress periods for each risk factor, in particular since risk factors are defined very granular (e.g. tenors in term-structure).

D) Other related regulatory requirements

While we understand that there is a desire to ensure supervisors only approve those models with an adequate level, and track record, of risk factor capture and coverage, we recognise a number of other regulatory safeguards in place to address similar related concerns around the role that models play in risk and regulatory capital calculations.

It is also worth noting that other components of the FRTB, and other regulatory requirements (e.g. Prudent Valuation framework) seek to address similar and related themes. The enhanced provisions on

the boundary are, in part, intended to ensure only liquid tradable instruments that can be reliably valued on a daily basis are within the scope of the market risk capital charge. Evidence will be required to demonstrate all risks within the trading book stem from positions that are subject to active trading and risk management.

Banks are also required to report Prudent Valuation Adjustments, that adjust accounting valuations for assets and liabilities marked-to-market (held at fair value) to comply with regulatory valuation standards that place greater emphasis on the inherent uncertainty around the value at which positions could be exited. Adjustments are applied to compensate for methodological weaknesses in valuation models and these are deducted from capital resources.

As such, when clarifying the rules of non-modellable risk factors, we would recommend the regulators to also take these other safeguards into consideration.