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Banking supervision
And Accounting issues Unit
The Director

Paris, September 7th 2012

French Banking Federation comments on the Basel Committee Consultative Document Fundamental review of the trading book (May 2012)

Dear Sir,

The French Banking Federation (FBF) is the professional body representing the interests of the banking industry in France. Its membership is composed of all credit institutions authorized as banks and doing business in France, i.e. more than 450 commercial and cooperative banks. FBF member banks have 40,000 permanent branches in France. They employ 400,000 people, and service 60 million clients.

The French Banking Federation (FBF) welcomes the opportunity offered by the Basel Committee on Banking Supervision (BCBS) to comment on the Fundamental review of the trading book and fully support the Committee's objective to seek a more consistent framework trading risks:

- We believe a substantial amount of work has been done and praise the TBG for that
- Overall, we think the broad orientations go in the right direction
- We feel however concerned by the potentially large divorce between risk and capital that certain Committees' proposals are likely to introduce, in particular:
    - The valuation-based boundary between trading and banking books
    - The general stance towards internal model "standardization" (for e.g. through the use of prescribed correlations or the introduction of floors based on the standard method) that eventually makes those models simply not usable for day to day risk management

We believe it is crucial that the fundamental review result in a market risk framework that provide the right incentives for sound risk management and we think this can be achieved without fundamentally altering the Committee's proposals.

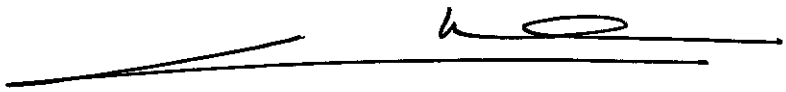
Mr Wayne BYRES
Secretary General
Basel Committee
on Banking Supervision
Bank for International Settlements
CH-4002 Basel
Switzerland

Furthermore, given the important number of methodological changes embedded within the fundamental review and their impacts on the market risk framework, we believe further in depth discussions should be held between Regulators and the Industry. These discussions should also include the Basel 3 CVA capital charge which requires further developments to achieve a more consistent approach.

We are willing to work closely with the Committee to that effect.

You will find in the annex our answers to the questions raised in the consultation paper. We thank you for the consideration of our remarks and remain at your disposal for any question or additional information you might have.

Yours sincerely,



Jean-Paul CAUDAL

Annex

1. Trading book / Banking book boundary: Which boundary option do you believe would best address the weaknesses identified with the current boundary, whilst meeting the Committee's objectives?

We believe it is of the utmost importance in a post Basel 2.5 environment to get the classification right and the risk capitalized according to their real nature. This involves analyzing the risks and how they are managed.
Relying on the accounting classification as proposed in the valuation-based boundary would result in including in the prudential trading book portfolios that are available for sale but by no means actively managed. This would create a material disconnection between the prudential classification and how the risk is actually managed and will end-up artificially inflating the trading books. It would also create a strong dependency towards accounting standards which are both a moving target and inconsistent across jurisdictions.

An evidenced-based boundary overcomes those shortcomings but can only work subject to strong governance and enforceable policies. We fully support implementing such strong governance as it is consistent with sound risk management principles and contribute to set-up the right risk management framework around each activity.

Finally we believe banks should remain allowed to transfer an asset from trading book to banking book under the control of their supervisors if exceptional circumstances warrant.. Structural changes in the market might indeed lead to a change in the bank's business model; in such cases, maintaining the assets in the trading book would result in an inconsistency between the way the risk is managed and the regulatory requirements

2. Liquidity horizons: What are commenters' views on the likely operational constraints with the Committee's proposed approach to capturing market liquidity risk and how might these be best overcome?

We support the introduction of market liquidity in the market risk capital requirement. The 3 options detailed for the incorporation of varying liquidity horizons in the market risk metric present implementation challenges:

- The mapping process between the liquidity of financial instruments and that of risk factors will have to be periodically assessed, according to the current market conditions, irrespectively to the option favored: a swap could become illiquid because no bank wants to be assigned with it though the swap rate or the swap curves are still liquid risk factors. The frequency of this review should be daily if we consider this metric as part of the risk management.
- The incorporation of liquidity into the risk metric implies a global review of the backtesting process and the construction of a new P&L.

These two points unveil the underlying risk of disconnection between the internal model-based approach for the market risk capital requirement and the internal model for the risk management.

The Committee is proposing three options for implementing this approach:

- Option 1 - historical or simulated long-horizon shocks: This approach would require extensive simulations together with a rebalancing of hedges up to the risk factor liquidity horizon. It is very complex and not all institutions using internal models will be in a position to implement it. Moreover, the issue of data availability this solution implies may spoil the quality of the measure.
- Option 2 - historical or simulated 1-day shocks with a scaling factor: This depends on a square root of time scaling using different horizons for different factors depending on the liquidity horizon bucket. This result would again not respect the correlation structure of risk factors across time and may artificially generate too large shocks.
- Option 3 - aggregate risk measure that is based on historical or simulated one-day shocks to a unified weighted-average liquidity horizon: This approach allows using 1-day correlations in a consistent fashion but then assumes the same correlations apply across longer horizons. In addition, using a weighted average liquidity horizon is not necessarily meaningful and would not provide a capital allocation that is proportional to risks. Backtesting considerations must also be taken into account and in that respect, only option 3 which keeps the 1day measure would allow to fulfil backtesting requirements.

Furthermore we would like to underline that we identify a risk of double-counting the capital add-on for jumps in liquidity premia (which would be required to mitigate large fluctuations in liquidity premia in times of stress) since the risk metric will have its shocks calibrated on a stressed period.

Regarding the endogenous liquidity risk, we would favor the option of its incorporation by further extending liquidity horizons. This option brings consistency in the approach of liquidity in the revised trading book regime.

Alternative proposal: Keeping the link between risk and capital metrics:

The following proposal seeks to articulate a framework whereby capital requirements are built upon an elementary risk metric that satisfies the desirable criteria for day-to-day risk management but calibrated to a level that achieves the Regulators objectives as laid down in the trading book fundamental review consultative paper. The objective is to keep a strong and consistent link between risk and capital in order to give banks the right incentives to continuously improve their risk measurement methodology, under the control of the supervisors.

In our framework, the elementary risk metric is an Expected Shortfall ES_{Firm} calibrated to a certain confidence level (for example 95%), on current market conditions, based on a 1 day liquidity horizon, using the firm internal correlation assumptions.

This elementary risk metric is an important building block to the capital framework but not the only one.

Indeed, we understand from the consultative paper that the Committee seeks to have a capital framework that satisfies the following criteria:

- Constrained diversifications benefits,
- Differentiated liquidity horizons by broad risk categories
- Calibrated to stress conditions

This can be achieved starting from the elementary risk metrics in the following way:

Step 1 consists in taking into account differentiated liquidity horizons by trading desk/portfolio:

We understand that the Committee's intention is to differentiate the liquidity horizons at the risk factor level. While it is conceptually sound and legitimate to consider that liquidity horizons might differ from a risk factor to the other, it remains nevertheless true that what matters at the end is the management horizon of each trading desk as a trading desk hedging an illiquid risk factor with a liquid one will not shed his liquid risks at a shorter time horizon and leave the illiquid ones naked. In other terms, the actual liquidity horizon of a risk factor is not the one resulting from a stand-alone assessment of this risk but the one resulting from the assessment of the whole risk management strategy of the trading desk.

The rationale of using the trading desk axis to assess the liquidity horizons is therefore multifold:

- Risks are not managed independently and liquidity horizons must be assessed taking into account all the risk components within a portfolio strategy (i.e. at a trading desk level)
- It is the axis chosen by the Committee for Backtesting and P&L attribution for model approval
- Although there will be no exact matching between trading desks risk factors (some risk factors like FX are transversal anyway), each trading desk will broadly correspond to a risk factor family with the other risks taken being non material
- Risks will be managed jointly within each trading desk and capital will be allocated accordingly
- It naturally addresses the issue of hybrid or transversal management desks

Let's denote βi the liquidity horizon adjustment factor for each broad risk factor/trading desk and let's assume that $\beta_1 < \beta_2 < \cdots < \beta_n$. We will assume that $\beta_0 = 0$.

We are going to build n portfolio with the following rule: Portfolio_i will contain all the trading desks with liquidity horizon equal or greater than β_i. For example Portfolio_1 will contain all the trading desks and Portfolio_n only those with liquidity horizon β_n.

The total P&L of the Portfolio at the final maturity β_n can be computed as sum of the P&L of Portfolio_i between β_{i-1} and β_i:

$$PnL = \sum_{i=1}^{n} PnL(Portfolio_i, \beta_{i-1}, \beta_i)$$

Assuming that the P&L distributions of each sub-portfolio during the non-overlapping time period are independent (in practice we disregard effects like auto-correlation), then the total Variance of the P&L can be computed as:

$$Var(PnL) = \sum_{i=1}^{n} Var(Portfolio_i, \beta_{i-1}, \beta_i)$$

Assuming the stationarity of the P&L distribution, we can then express the total variance as:

$$Var(PnL) = \sum_{i=1}^{n} Var(Portfolio_i, 0, \beta_i - \beta_{i-1}) = \sum_{i=1}^{n} Var(Portfolio_i, 1day)(\beta_i - \beta_{i-1})$$

And finally we are going to assume that the Expected Shortfall is proportional to the Standard Deviation:

$$ES^{Liq\_hor\_adjusted} = \sqrt{\sum_{i=1}^{n} ES(Portfolio_j, 1day)^2 (\beta_i - \beta_{i-1})}$$

This approach has several advantages:

- Keeping the integrity of the P&L aggregation as the elementary risk metrics would be computed at a 1 day horizon and aggregated based on 1 day correlations.
- Keeping the right structure of incentives as the capital of each broad business unit would be scaled-up according to the broad liquidity horizon of its activity.
- Allowing for a realistic backtesting (i.e. based on 1 day P&L) as it would rely on the elementary risk metrics which are computed at a 1 day horizon.
- Fairly straightforward to implement (avoid the issues of rolling hedges, etc.)
- Regulators can impose "standard" liquidity horizons adjustments per broad risk classes /trading desks without distorting the relative magnitude of risks in the firm wide expected shortfall.

Step 2 consists in limiting diversification benefits:

This is done by computing the 'diversification benefit', defined as the sum of standalone risks, minus the fully diversified risk value and defining capital as the sum of the standalone values, less some proportion α of the diversification benefit. Using the notations introduced above,

$$ES_{div\_adjusted}(Portfolio_j) = (1-\alpha) \times \sum_{i=1}^{5} ES_i^{stand-alone}(Portfolio_j^i) \times + \alpha \times ES(Portfolio_j)$$

where α would be a factor between 1 and 0 set by supervisors according to their view on the quality of a firm's model of diversification[1] and $ES^{stand-alone}$ the standalone 1 day Expected Shortfall for Credit, Interest Rates, FX, Equity and Commodity risks respectively..
This would be a more natural approach since it does not seek to specify a hard-to-calibrate set of cross-risk correlation factors and long/short classification of portfolios, but instead uses a risk-sensitive portfolio model, with a limit on correlation benefit.

From this equation, we can derive the unstressed Expected Shortfall adjusted for liquidity horizons and diversification:

$$ES_{div\_adjusted}^{Liq\_hor\_adjusted} = \sqrt{\sum_{j=1}^{n}\left(\alpha ES(Portfolio_j, 1day) + (1-\alpha)\sum_{i=1}^{5} ES^{stand-alone}(Portfolio_j^i)\right)^2 (\beta_j - \beta_{j-1})}$$

It should be noted that while the 5 broad risk factors mentioned above seem the natural axis to compute the stand-alone Expected Shortfall, in practice, it creates a lot of complexity especially under the full revaluation approach promoted by the Committee. A much more tractable axis would be in fact to use the activity dimension, i.e. compute the stand-alone ES for Credit, IR, FX, Equity and Commodity activities rather than the risk factors stricto sensu, knowing that there is a nearly complete correspondence between the two dimensions as each activity will be characterized by a dominant risk factor.

Step 3 consists in calibrating to stress conditions:

This is achieved simply by scaling the Expected Shortfall calibrated to current conditions and adjusted for diversification and liquidity horizons to a stress level in a dynamic way:

$$Capital_{Firm} = ES_{div\_adjusted}^{Liq\_hor\_adjusted} \frac{ES_{RS}}{ES_{RC}}$$

The stress scalar is equal to the ratio of Expected Shortfall based on a set of reduced risk factors scenarios observed in a period of stress to the Expected Shortfall based on the same reduced set of risk factors observed in the current period. The scalar can be computed on a weekly basis at least so as the adjustment to the stress level remains by all times effective.

3. Relationship between the standardized and internal models-based approaches: What are commenters' views on the proposed regime to strengthen the relationship between the standardized and internal models-based approaches?

We support the intention to align properties of standardized approaches with internal models-based approaches.

[1] With α = 1 corresponding to full modelling of diversification and α = 0 corresponding to simple addition of risk by category with no diversification. Alternatively, Regulators might chose to apply a uniform constraint on diversification by imposing a unique α factor to all banks.

We are less convinced about the usefulness of a mandatory calculation of standardized capital requirements for all banks. If the aim of such computation is to compare banks, we believe that the use of common/simulation portfolios is more appropriate to fulfill the benchmark exercise and to compare implementation between banks and/or across jurisdictions. Then relative riskiness of banks portfolios could be assessed by rescaling of their internal model output rather than the standard method which could bias the risk appreciation.

We believe such calculation, if imposed, must be designed to not overburden internal model banks with too many parallel regulatory capital processes or high reporting frequencies for a metric which is not relevant in day-to-day risk management.

However, if a mandatory calculation of standardized capital requirements was imposed, then a smooth transition between the two via a weighted average of both outputs depending on the model's performance would be a much preferable alternative as it keeps the incentives for the improvement of internal models and limits the arbitrage opportunities that would arise should a floor based on the standardized method apply.

Similarly, we strongly disagree with the introduction of regulatory capital floors based on standardized approaches as it disincentivises the use and further development of internal models and might shift the focus from risk management towards regulatory arbitrage.

A model benchmarking such as the one currently carried on by the Standard Implementation Group would be a much better safeguard and would bring much more added value to the model approval process. This along with the more granular backtesting and P&L attribution exercises contemplated by the Committee could translate into scaling factors to the internal model output allowing to keep the incentives for banks to improve their internal models.

4. Model approval process: What are commenters' views on the Committee's proposed desk-level approach to achieve a more granular model approval process, including the implementation of this approach for banking book risk positions? Are there alternative classifications that might deliver the same objective?

We agree with the Committee that a desk level approval process would be more appropriate than a firm wide one as it would allow to capture the areas where the model works and those where it does not.
However, such desk-level needs to be set at an appropriate level as an approval process that is conducted at a very low level can be very noisy.

We strongly disagree with the binary determination of the eligibly of trading desks for the internal model approach and the application of the standardised method in case of failure of the backtesting of the P&L attribution exercises. As stated above (answer to question 3), we suggest the use of multiplication factors to the internal model output as a more gradual approach that keeps the incentives for banks to improve their internal models. These scaling factors would be based on the back testing (number and size of the breaches) and P&L attribution outcomes.

If the standard method is to be retained, then we believe a more gradual approach based on a weighted average of the model and standard rules would be much more appropriate.

Regarding the monitoring of market risk in banking book, the Committee presents 3 options:

- Use of the standardised approach in the banking book and promote transfer of market risk to the trading book: As highlighted in the boundary section, we do not support the transfer of risks that are not actively managed to the trading book. Using the standardised approach in the banking book should however remain an option rather than an obligation.
- Authorize internal model in the banking book regardless of the instrument used: We understand the Committee's concern around potential arbitrage opportunities. We believe this could be strongly mitigated by restricting the possibility of using internal models in banking book to products used by trading desks that have successfully passed the Backtesting and P&L attribution tests.
- Build test portfolios to backtest the P/L: We believe that this option involves extremely complex organisational issues and we strongly oppose it.

5. Calibration to a period of stress: What are commenters' views on the merits of the "direct" and "indirect" approaches to deliver the Committee's objectives of calibrating the framework to a period of significant financial stress?

We support the Committee's objective to calibrate the framework to a period of significant stress to come up with a capital charge that is both conservative and less procyclical.

While we support the indirect method, which should be applicable in every approach, we believe however that this objective must be achieved without breaking the link between the metric used for day-to-day risk management and the one used for the capital computations. We also believe that any backtesting exercise would only make sense in the context of a risk measure calibrated on current conditions rather than on period of significant stress.

This can be achieved simply by calibrating the Expected Shortfall to current conditions and scaling it up to a stress level in a dynamic fashion (this is more or less done in the indirect method except that the introduction of Maximum Stress Loss concept somehow pollutes the intention).

As introduced in the step 3 of our response to question 2, we propose to replace the indirect approach by the following formula, which we believe better captures the intent:

$$ES_S = ES_{FC} \frac{ES_{RS}}{ES_{RC}}$$

This approach provides an Expected Shortfall measure based on current Expected Shortfall (ES_S) and scaled by the ratio of Expected Shortfall based on a set of reduced risk factors scenarios observed in a period of stress (ES_{RS}) to the Expected Shortfall based on the same reduced set of risk factors observed in the current period (ES_{RC}). In other terms, the outcome is an Expected Shortfall based on current period (and hence useful for day-to-day risk management and for backtesting) scaled to a stress level to achieve the capital requirements calculations. The scalar can be computed on a weekly basis so as the adjustment to the stress level remains by all times effective.

6. Diversification and aggregation: What are commenters' views on the merits of the desk-based and risk-factor-based aggregation mechanisms to deliver the Committee's objectives of constraining diversification benefits?

We believe it is sound to compute risk measures at more granular level to better identify where risk may be emerging.

We also acknowledge that hedging and diversification benefit can materially diminish during periods of stress. We do not believe however that pre-imposed correlations across risk classes is a good way to take into account such possible deterioration. This could, on the contrary, have very distortive and unintended consequences.

We do not think either that the notion of long or short is meaningful in a portfolio context in particular within large trading books where the primary risk might in fact be basis risk.

We therefore strongly recommend not having regulatory specified correlations, but instead allow banks to model correlations in full. The stress calibration (or scale-up to a stress level) is already there to reflect potential reduction in diversification benefits.

Should the Committee wish, despite the stressed calibration, to further limit the level of diversification implied by internal models, an alternative, as detailed in step 2 of our response to question 2, is to compute the 'diversification benefit', defined as the sum of standalone risk by category, minus the fully diversified risk value. Capital could then be set as the sum of the standalone values, less some proportion α of the diversification benefit.

7. Credit risk: How can regulators ensure robust supervision of integrated market and credit risk modelling? In particular, how would an integrated modelling approach affect other elements of the proposed framework (eg the choice of the quantile parameter for ES, the P&L attribution and backtesting processes, etc)?

We welcome the Committee's willingness to put under review the assumption of "constant level of risk" over the capital horizon (i.e. one-year horizon) that currently applies to the modeling of migration risk (IRC and CRM). Indeed, this assumption is contrary to the very nature of the trading activities. The concept of "liquidation horizon" offers the possibility for a more consistent modeling between credit and market risks.

We believe most of the credit risk in the trading book is not "rating-related" but rather "spread related". In other terms, large movements in credit spreads are a much more relevant to trading book than rating migration (which very often lags behind spreads anyway).

From a modeling perspective, those risks can be captured by a robust simulation of credit spreads over the appropriate liquidity risk horizon.

In this respect, moving to an Expected Shortfall with multiple liquidity horizons measure is fully appropriate to a credit risk modelling that integrate all events even those with a low probability (today IRC must use a 99.9% percentile to capture such spread shocks but conducting to completely unrealistic scenarios).

8. Use of an Expected Shortfall: What are the likely operational constraints with moving from VaR to ES, including any challenges in delivering robust backtesting, and how might these be best overcome?

We support the Committee's proposal to move to an Expected Shortfall ("ES") type of measure and agree with arguments advocated by the Committee.

We believe however that such measure would only be appropriate and manageable if the confidence level is lowered (the 95th percentile would be a good candidate for instance) as a too high percentile will lead to a very unstable measure, hard to backtest and hard to model as well (a too high threshold would not allow for enough observations from which to form the average the losses). As Leippold and Vanini [2] shows, there is a link between percentile between VaR and ES for a given capital requirement. Typically, ES computed from the 95th percentile will deliver a similar capital standard to VaR computed at the 99th percentile for Profit and Loss tails of medium fatness.

We consider that regulation should target the overall quality of the risk metrics produced by a process. Some processes will tend to be more precise during the sampling step but rely on more approximations during the valuation steps while others will exhibit opposite features.

[2] Markus Leippold and Paolo Vanini: "Half as many cheers – The multiplier reviewed". *Financial Valuation and Risk Management Working paper No.58.*

We support the Committee willingness not to favor a process against another as we believe unreasonable standardization would create systemic modelling risk. Accordingly, we believe the Committee should recognize that an insistence on full revaluation could actually reduce the accuracy of the overall measure as it would disincentivize from using more sampling points.

9. Revised Standardised approach: Which of the two approaches better meets the Committee's objectives for a revised standardised approach?

The Committee proposes to review the standardised approach since a number of important shortcomings have been identified with the current approach. We support the Committee's intention to improve the standardised approach. Nevertheless as explained in point 3, we believe mandatory calculation of standardised capital requirements for all banks would be useless since it would overburden internal model banks and distract them from improving their models. Our point of view is fully dependent on the frequency of the calculation under the revised standardised approach which should be far less from daily computation.

Should standardised approach calculation become mandatory for all banks, the key drivers for the design of the revised standardised approach would be improved risk sensitivity, credible calibration, limited model reliance and credible fallback to internal models. It should also demonstrate simplicity, transparency and consistency. Two alternative rules have been proposed by the Committee:

- Partial Risk Factor Approach
    - Assign all instruments in scope to prescribed asset "buckets" unless they require "decomposition" (see below) – 20 asset buckets per risk class and 5 risk classes.
    - Calculate each bucket's capital charge using supervisor-determined risk weights and correlations
    - Aggregate the buckets using a supervisor-provided method, in order to determine the capital requirement.
    - Decomposition – derivatives and cross-cutting risk factors (FX and general interest rate risk)
    - Option deltas stripped out and included in the underlying. Remaining Greeks dealt with in an option bucket.
    - Then correlated sum within bucket followed by correlated sum across buckets

- Fuller Risk Factor Approach
    - Assign each instruments to applicable risk factors
    - Determine the size of the net risk position in each risk factor - sensitivity analysis to shifts in risk factors – multiple shifts using firm's own pricing models for non-linear positions and single shift for linear positions

- Aggregate overall risk positions across risk factors – distribution of risk factors to be specified by regulators. Aggregation first within risk factor class – possibly assuming zero correlation of risk factors of the same risk factor class – then aggregate across risk factor classes using a correlated sum along lines used for aggregating across desks for internal models.

In both approaches, there is a better recognition of hedging and diversification benefits which is valuable. The revised standardised approach charge will also provide a benchmark for assessing the value of a model approach and will allow comparison of models across banks. But they are both heavy on underlying assumptions (e.g., risk factor mappings) and rely on a broad set of parameters (e.g., correlations). Benefits and shortcomings of each proposition are:

- Partial Risk Factor Approach
    - Should generally be simpler to apply and more specifically for smaller firms with no internal models
    - Requires an alternative calculation infrastructure for firms with internal models
    - The general interest rate cross cutting approach is unnecessarily complex.
- Fuller Risk Factor approach:
    - Requires use of pricing models
    - Eases comparison between the standardised approach and the internal model
    - Allows leveraging of the internal model infrastructure for firms with internal models and then is more robust than partial risk factor approach since it uses the same infrastructure
    - Has the potential to provide a greater level of risk sensitivity
    - Simple aggregation method could reduce quality of the result
    - Still has mapping requirements of partial approach
    - Is very demanding for small firms that do not have resources for internal models

It seems to us fairly complex to strike the right balance between simplicity (a standard approach ought to be simple enough to allow soft operational implementation for banks with limited and noncomplex trading activities) and risk-sensitivity (the objective of using the standardised approach as a credible fall back for internal models even in our weighted average proposal pleads for an approach that is as closer as possible to internal models).

From banks using internal models perspective, and subject to appropriate specification and calibration, the fuller risk factor approach is the preferred approach since:

- It has the potential to provide a greater level of risk sensitivity since the contribution of any included risk factor can be captured accurately
- It allows them to leverage on their existing internal model infrastructure

For smaller firms, the Partial Risk Factor approach is likely to be a much more sensible approach.

This dual solution enables to keep the overall cost of implementing standardised approach under control in the two cases.

10. Amendments: Do commenters propose any amendments to these approaches?

We believe it is important that the current (more simple) standardised approach remains available to very small banks with limited trading activity.

Annex II: Focus on the liquidity horizon proposals

In the Fundamental Review of the Trading Book, Regulators consider incorporating the assessment of market liquidity into trading book capital requirements. Two approaches would be combined: (i) a requirement to incorporate varying liquidity horizons within the regulatory market risk metric; and (ii) a requirement for banks to hold additional capital against the risks to the valuation of financial instruments from jumps in liquidity premia when the latter are not sufficiently reflected in historical price data.

To incorporate varying liquidity horizons within the regulatory market risk metric, the Committee proposes that banks assign their trading book exposures to liquidity horizons (from 10 days to 1 year).

This raises the question of how to incorporate these varying liquidity horizons in the regulatory market risk metric. The Committee identified three options: the first is to apply shocks directly at longer horizons. The second is to apply short-term shocks and scale the inputs of the market risk model to varying longer horizons. The third is to apply short-term shocks and scale the output of the market risk model to a single longer horizon.

In this appendix, we provide a comparison of the different proposals detailed in the consultative document.

This comparison will rely on a simple example in which, one would consider a portfolio containing two assets indexed by *i*, where:

- q_i are the proportions of each asset, with $\sum q_i$ =1
- h_i is the liquidity horizon of each asset
- The asset values are modeled as diffusion processes characterized by their respective variance σ_i^2 and correlation ρ .

We suppose $h_2 > h_1$
In order to benchmark the proposals of the consultative document, we will consider that the variance of the offsetting value of this portfolio is given by the following equation:

$$\bar{\sigma}^2 = \left(\underbrace{q_1^2\sigma_1^2 + 2q_1q_2\rho\sigma_1\sigma_2 + q_2^2\sigma_2^2}_{\sigma^2_{p_{h1}}}\right).h_1 + \underbrace{q_2^2\sigma_2^2}_{\sigma^2_{p_{h2}}}.(h_2 - h_1)$$

This equation could be written in a simplified way:

$$\bar{\sigma}^2 = \sigma^2_{p_{h1}}.h_1 + \sigma^2_{p_{h2}}.(h_2 - h_1)$$

Where

- $\sigma^2_{p_{h1}}$ is the variance of the portfolio containing assets 1 and 2;
- $\sigma^2_{p_{h2}}$ is the variance of the portfolio containing asset 2 only (the less liquid asset in this example).

1. Rescaling one-day shocks

One approach proposed by the Committee consists in scaling-up one-day shocks with square root of time up to liquidity horizon (Option 2 in the consultative document).
This approach could be translated by the following equation:

$$\bar{\sigma}^2 = \left(q_1^2\sigma_1^2.h_1 + 2q_1q_2\rho\sigma_1\sigma_2\sqrt{h_1.h_2} + q_2^2\sigma_2^2.h_2\right)$$

Using this methodology would induce the following approximation:

$$\bar{\sigma}^2 - \hat{\sigma}^2 = 2q_1q_2\rho\sigma_1\sigma_2\left(\sqrt{h_1 \cdot h_2} - h_1\right)$$

$$\bar{\sigma}^2 - \hat{\sigma}^2 = 2q_1q_2\rho\sigma_1\sigma_2 \cdot h_1\left(\sqrt{\frac{h_2}{h_1}} - 1\right)$$

When $h_2 = 2h_1$, this error is equal to 40% of the correlation term in the portfolio variance computation; When $h_2 = 4h_1$, this error is equal to 100% of the correlation term in the portfolio variance computation.

The error amount will depend on the correlation sign: portfolio variance could be overestimated if correlation is positive or under estimated if correlation is negative.

This error will remain small if correlation is close to 0 but will be of the same order as variance itself if correlation is close to 1 or -1.

Conclusion: this approach would not be deemed acceptable.

2. Using an average liquidity horizon

Another approach proposed by the Committee consists in calculating a one-day shock risk measure that would be scaled up to a unified weighted average liquidity horizon (option 3 in the consultative document).

Let's consider h_m as the weighted average liquidity horizon;

The portfolio offsetting value variance could be written by the following equation:

$$\hat{\sigma}^2 = \left(q_1^2\sigma_1^2 \cdot h_m + 2q_1q_2\rho\sigma_1\sigma_2\sqrt{h_m \cdot h_m} + q_2^2\sigma_2^2 \cdot h_m\right)$$

$$\hat{\sigma}^2 = \sigma_{P_{h1}}^2 \cdot h_m$$

The average liquidity horizon could be calibrated according to $\sigma_{P_{h1}}^2$ and $\sigma_{P_{h2}}^2$ variances:

$$h_m = \frac{\sigma_{P_{h1}}^2 \cdot h_1 + \sigma_{P_{h2}}^2 \cdot (h_2 - h_1)}{\sigma_{P_{h1}}^2} = h_1 + \frac{\sigma_{P_{h2}}^2}{\sigma_{P_{h1}}^2} \cdot (h_2 - h_1)$$

However, the calibration of h_m would need to be updated as soon as the portfolio structure changes. Let's consider h_m calibrated for a portfolio with the 2 assets; on the next day, we suppose that asset 2 is sold; we would however continue to assess the risk using the following equation:

$$\hat{\sigma}^2 = q_1^2\sigma_1^2 \cdot h_m$$

While the exact value of the updated portfolio would be:

$$\bar{\sigma}^2 = q_1^2\sigma_1^2 \cdot h_1$$

And the error would be:

$$\bar{\sigma}^2 - \hat{\sigma}^2 = q_1^2\sigma_1^2 \cdot (h_m - h_1) = q_1^2\sigma_1^2 \cdot \frac{\sigma_{P_{h2}}^2}{\sigma_{P_{h1}}^2} \cdot (h_2 - h_1) = q_1^2\sigma_1^2 \cdot h_1 \cdot \frac{\sigma_{P_{h2}}^2}{\sigma_{P_{h1}}^2}\left(\frac{h_2}{h_1} - 1\right)$$

So the error term is the true value multiplied by:

- The ratio between the variances of portfolios P_{h2} and P_{h1} which should be lower than 1
- And a term which could be equal to 3 if $h_2 = 4h_1$.

Conclusion: again error can't be controlled, so methodology would not be deemed acceptable.

3. Other proposals (capital add-on/valuation adjustment)

Other proposals have been discussed within banks associations; one of these alternatives would consist in computing the risk measure for a unique horizon combined with capital add-on to account for longer liquidity horizons.

In our simplified example, asset 1 of liquidity horizon h_1 would be combined to a capital add-on to account for asset 2 longer liquidity horizon h_2.

Effectively if the add on is computed as

$$addon = q_2 \, \sigma_2 \cdot \sqrt{(h_2 - h_1)}$$

This add-on would be integrated using a quadratic formula

$$\hat{\sigma}^2 = \sigma^2_{P_{h_1}} \cdot h_1 + addon^2$$

Conclusion: if asset 2 is a portfolio its variance must be computed taking into account diversification using the complete set of correlation and not only adding the individual asset add on.

Another proposal would be to assess the liquidity risk through prudent valuation. If our understanding is correct the corresponding valuation adjustment would be added to the risk measurement based on a single liquidity horizon. Rather than relying on prices shocks, this approach would rely on bid-ask observations. Again, with this approach, we may largely overestimate the true risk not taking into account diversification effects.

Annex III: Focus on the CVA capital charge

The Basel Committee has introduced a capital charge capturing the volatility of Credit Valuation Adjustments ("CVA") within the Basel 3 framework.
According to the Basel proposal, this volatility is assessed on the basis of the market-value of the credit risk on the counterparty, i.e. the volatility of its CDS spreads (or of a proxy spread also derived from CDS levels). Note that **the proposed prudential treatment of CVAs is completely disconnected from current accounting treatment of CVAs**.

The proposed treatment of CVA in Basel 3 raises numerous issues:

- CVA are dynamic provisioning: they already anticipate the potential risk of default of a counterparty. Adding a capital charge to cover their potential increase and basing this charge on market parameters is massively pro-cyclical.
- Requiring such a capital charge is neither obvious as it consists of protecting banks from the effects of the volatility implied by accounting standards. At default, the LGD is totally absorbed by the CVA itself; therefore capital is of no use.
- The disconnection between the capital charge and banks business model/CVA accounting practices is also very problematic and can potentially create risks where they do not exist.
- Indeed, banks that do not mark CVA to market are required to calculate a capital charge that is based on market credit spread volatility; this volatility however simply does not exist in their measurement of P&L and earnings. Those banks are therefore induced by a regulatory provision to hedge the "regulatory CVA" in order to reduce their capital charges and its volatility; this not only would be a deviation from their business models but would also cause increased P&L and earnings volatility as it is not matched by any corresponding CVA volatility.
- This incentive to hedge will increasing the demand for CDS, in particular for Sovereign CDS, which may have a feedback loop on the price of the debt issuances, in particular in stressed situations.
- This will further exacerbate the pro-cyclicality highlighted above.
- The disconnect is also problematic for Banks that mark CVA to market because they are subject to a capital charge that is not derived from their CVA pricing and risk models; they are required to use methodologies and assumptions that diverge from their internal pricing and risk calculations.
- Moreover, for those banks, the CVA charge is standalone and only account for the credit spread risk. This implies that, on one hand, the CVA risks do not diversify with the rest of the Trading Book risks, and on the other hand, market risk hedges are left naked in the trading book without the offsetting CVA exposures.

We believe it is extremely important that the Committee reconsider its proposals on the CVA charge, taking into account the differences in business models and the potential unintended consequences of such a procyclical charge and the great emphasis it put on the CDS market.