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Basel Committee on Banking Supervision
Bank for International Settlements
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Dear Members of the Basel Committee on Banking Supervision:

Algorithmics appreciates this opportunity to comment on the "Guidelines for Computing Capital for Incremental Risk in the Trading Book" consultative document ("the Guidelines") issued in January 2009 by the Basel Committee on Banking Supervision ("the Committee"). As a provider of risk-related software and services to more than 300 international financial institutions, we have undertaken discussions of the Guidelines with a wide range of banks that will be directly and immediately impacted by the changes. For your reference, we provided a corporate overview of Algorithmics in Annex D to our letter dated October 14, 2008.

We continue to support the general objective of the revised proposal in creating a more comprehensive and risk-sensitive capitalization standard for the trading book. We commend the Committee for its adaptation of the Guidelines based on previous industry comments and rapidly evolving market conditions as well as its attempt to articulate attainable standards of practice for international financial institutions.

We would like to bring four specific items to the attention of the Committee. While we appreciate the greater clarity of scope within this revision of the Guidelines, the substantive changes are of some concern, particularly as they relate to integrated risk and the treatment of securitizations. Our previously-stated concerns relating to the constant level of risk remain, but to a lesser extent. The remainder of this letter details our observations and questions on these four matters and on the questions posed by the Guidelines for specific comment.

Scope

The scope of the incremental risk charge is much more clearly articulated in the current Guidelines. Our earlier concerns regarding the treatment of equities have been fully addressed by making their inclusion optional, and thus, likely to be confined to particular circumstances. The clarification that only positions subject to specific risk charges are subject to the incremental risk charge addresses the question of LIBOR rates. However, during a recent seminar, we found that the majority of questions pertained to the details of the scope of the IRC. So, there clearly remains some confusion in the industry on these details. Further clarifications through national regulators are likely to address these concerns.

Integrated Risk

As we articulated in our previous letter, a fully integrated measure of risk would be beneficial to both the financial institution and the regulator. It could provide more realistic, comprehensive and actionable results in a more transparent manner. Therefore, the explicit exclusion of integrated risk models for incremental risk measurement seems a contradiction of the philosophy of the internal models approach.

The Guidelines present two specific concerns of the Committee in permitting integrated (market and credit) risk models. We would like to address those concerns.

> *"The impact of diversification between default or migration risks in the trading book and other risks in the trading book is not currently well understood." – s.26.*

This statement was surprising to us: many of our clients have been using integrated measures of risk for management purposes for some time. Annex C to our letter of October 2008 provided an illustrative example of a common technique for integrating general market risks with default risks. We have also seen a significant volume of academic and practitioner papers in this domain, supported by a number of conferences.

> *"This is consistent with the Basel II Framework, which does not allow for the benefit of diversification when combining capital requirements for credit risk and market risk." –s.26.*

While we agree with this statement in general, there are instances within the capital calculations for the trading book where integrated risk measures are in use. For example, the approach to calculating "alpha" for counterparty credit risk is based on a fully integrated measure of market and credit risks. While alpha is not used directly to provide a diversification benefit, the use of an internally calculated alpha can lead to capital relief of almost 20%.

Mosaic of Measures

Without the adoption of an integrated, consistent approach to measuring market risk, the Guidelines may reduce market risk measurement to an exercise in adding together various, seemingly unrelated risk measures. General market risks are measured at 10 days and 99%, as is a newly introduced 'stress' VaR. Specific risk is estimated, often separately, on the same basis. Incremental risk is measured for default and migration risks, possibly including equities on a one year, 99.9% level. Securitizations have a separate, banking-book-style measure of incremental risk. All told, at least five separate measures get added together to measure market risk under the internal models approach. The problem is compounded in cases where different techniques are used in different parts of the book or regulatory jurisdictions.

This mosaic approach to risk measurement has real consequences in terms of adopting appropriate, consistent tools for both internal management purposes and regulatory compliance. Firms will find it more challenging to meet use-test requirements because the suitably risk-sensitive, comprehensive tools required for internal risk management are not accepted for compliance purposes. Regulatory reviews will be more challenging, requiring multiple models with substantial input data differences to identify, track, validate and benchmark the risk.

Constant Level of Risk

We observe that, while the twin concepts of liquidity horizon and constant level of risk are still included as options in the latest revision of the Guidelines, the limitations that have now been imposed will serve to de-emphasize this approach. Specifically:

- increasing the floor of the liquidity horizon to three months (s.20),
- requiring longer horizons for concentrated positions (s.23),
- specifying that liquidity horizons must reflect stressful market conditions (s.18,19,33),
- requiring non-investment grade positions to have longer liquidity horizons (s. 21), and
- imposing standards on correlation levels (s.27,s.33)

The requirements are likely to force many financial institutions into adopting a one-year horizon for a vast majority of their positions. In particular, a one-year horizon is likely for the positions that drive risk at the extremes of the tail, including the 99.9% level: the concentrated parts of the portfolio. So, while the option to adopt the constant level of risk approach remains, the reality of today's markets and the additional validation requirements are likely to sway the results of a cost-benefit analysis against its implementation.

Moreover, our concerns with the adoption of a constant level of risk from a modeling perspective remain. Many of these concerns are detailed in our previous response. For the sake of brevity herein we highlight only two additional concerns, based on the latest revisions to the Guidelines:

Complexity: Overall, the approach introduces significant complexity for limited benefit both in terms of risk management best practice and in terms of capital relief. The numerous model constraints added in the latest revision lead to increased complexity – for the implementation of the IRC calculation, its regulatory review, external disclosures and any cross-firm comparisons. For example, the use of a multi-step model must now include a provision for the constant level of

risk and some sort of correlation adjustment to preserve the implied annual correlations (s.33). The adjustment must be documented and validated in addition to the underlying model.

Potential contradictions: The constant level of risk approach leads to a series of logical contradictions: despite the validation requirements, a multi-period model including the concept of a constant level of risk erodes correlations; it is inconsistent with modern utility theory; and it is not what appears to be happening in today's markets.

The discussion of correlations (s. 33) would suggest that multi-period models would not be appropriate if they cannot preserve the historically observed annual correlations. Depending on the interpretation of "annual correlations", this condition may never be satisfied. As expressed in our previous response, multi-period models implicitly reduce the correlations and concentrations relative to an annual holding period when roll-overs are modeled. This is a tautology, not a result of a particular implementation of multi-period simulation: Any modeled rebalancing or resetting of the portfolio will introduce "noise" to an otherwise continuous process over time, thereby reducing correlations.

This contradiction may force financial institutions to forego multi-period models of incremental risk and attempt to approximate the behaviour with some sort of input scaling in a single-period model. Our recent studies have shown that the number of possible scaling methods is enormous. Narrowing down the list to a few candidate techniques relies on a combination of quantitative and qualitative criteria. Standardization of key criteria or the relative importance of the criteria for scaling approaches used for compliance purposes could prove helpful in maintaining consistency and comparability across institutions.

A further contradiction arises from the principles of utility theory. Consider the behaviour implied by assuming a constant level of risk: as losses are incurred, the bank funds the losses from capital, re-investing the same dollar amount into an identical investment. However, because of the losses, the investment now constitutes a larger percentage of the wealth of the bank. The counterintuitive implication is that the bank is willing to take more risk for the same reward. More technically speaking, assuming a constant level of risk implies a decreasing marginal utility of wealth as wealth decreases. This directly contradicts the most common axioms upon which utility theory has been based over the last several decades.

Finally, as witnessed over the last six months, banks have not been exhibiting a tendency to reinvest at previous risk levels. Instead, capital preservation and de-leveraging have been the first orders of business in this modern-day extreme environment. Little re-investment has been directed into areas having already suffered substantial losses. So, while realistic under "normal" market conditions, the constant level of risk assumption fails in the context of extreme markets: exactly the area in which capital is measured.

Given the nature and severity of the issues surrounding the constant level of risk approach, there is likely to be huge variety in incremental risk models across banks, complicating the review and creating inequalities. These inequalities may compound should large deviations emerge in the liquidity horizons being accepted by different regulators for similar positions. Conversely, it is also possible that many banks will forego multi-period models in favour of approximations, or simply forego the potential capital relief and adopt a constant position approach.

Consistency with the Banking Book

In the Guidelines, the Committee posed a series of related questions:

> *"What is the industry's view regarding an alternative approach to the specific risk capital requirements, whereby the IRB, the Standardised Approach, and securitisation charges that are applicable to the banking book would also be applied to such positions in the trading book? ... If such an approach were to be followed, what implications would this have for trading portfolios with a mix of long and short positions?" – s.40, s.41*

While the adoption of banking book standards holds a certain appeal in terms of consistency and simplicity, it is a step backwards in terms of risk sensitivity. We also have concerns with the manner in which the banking book rules might be applied to trading book positions. For example, in the case of double defaults, the banking book treatment is likely to prove inappropriate. Further, the estimation of EAD, alluded to by the long-short question of s.41, would require significant clarification were banking book rules to be extended to all trading book positions for which specific risk must be calculated.

For these reasons, we suggest that adapting the banking book rules to capitalize specific risk may not be entirely straightforward. In this case, the issues are unlikely to be resolved on a timeline consistent with the January 2011 implementation deadlines.

We thank the Committee for its diligent review of our concerns and comments. We would welcome queries or requests for further detail on any of the topics raised, or related issues. We can be reached by telephone at +1 416 217 1500. Alternatively, we are available via e-mail to Michael.Zerbs@Algorithmics.com or Ben.DePrisco@Algorithmics.com.

Sincerely,

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