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Treatment of Collateralised Transactions

Dear Norah,

The International Swaps and Derivatives Association, the London Investment Banking Association and The Bond Market Association (collectively, "we" or the "Associations") appreciate the opportunity to respond to the letter dated 17 April 2002 (the"17 April Letter") from the members of the Basel Committee Capital Group's Subgroup on Credit Risk Mitigation ("Subgroup") regarding the treatment of collateralised transactions under the January 2001 Second Consultative Paper ("CP2") and the publication of a new Basel Accord (the "Accord"). We hope that, given the brief period the Associations had to respond to the issues raised in the letter, we were able to offer as detailed a response to the 17 April Letter as is warranted by the importance of the issues therein. The Associations applaud the Subgroup's continuing efforts to seek feedback from market participants, and hope in the future that we will have more time to respond to the important issues raised by the Subgroup.

Summary of Key Points

We have set out our detailed response below to the issues raised in the 17 April Letter in the same order as such issues are set forth therein. Before presenting our detailed comments, we would like to call the Subgroup's attention to the following items of particular importance to the Associations.

Application of a multiplier to VaR-based measure: The Associations strongly disagree with the imposition of any ex ante multiplier greater than one for VaR-based aggregate counterparty exposures for capital purposes. The application of a multiplier is inappropriate given the inherently conservative nature of a VaR-based measure of aggregate counterparty exposure for the following reasons.

1) At the individual counterparty level, the VaR-based measure is significantly higher than the true loan-equivalent measure on a securities financing portfolio.
2) At the aggregate level, it ignores the diversification across individual counterparty exposures by implicitly assuming perfect correlation among all counterparty exposures.
3) The five-day exposure measurement horizon is substantially longer than the liquidation horizons to be expected from the regular practices on the US and a number of European markets. (See **VaR-Based Measure for Repo-Style Transactions**.)

Model validation and backtesting: The Associations agree with the need for appropriate model validation to validate a VaR based measure of counterparty exposure, but believe the imposition of a backtesting regime to validate such VaR measure is not appropriate. The Associations further believe that the imposition of ex post multipliers based on exceptions to such backtesting regime is inappropriate. We suggest instead that model validation based on a variety of substantive and supervisory procedures will provide greater assurances to local regulators than would a backtesting regime similar to that in the Internal Models Approach under the 1996 Market Risk Amendment. Recognizing that the Subgroup might deem backtesting to be necessary, however, we propose a backtesting procedure and table of ex post multipliers. (See **Backtesting VaR Measures**.)

Netting of risk positions in the standard (non-VaR based) approach with master netting agreements: The Associations urge the Subgroup to consider permitting netting at the risk factor level, subject to review and approval by national regulators, as opposed to netting at the security level. (See **Master Netting Agreements**.)

Detailed comments

In this letter and the 17 April Letter, the term "VaR" refers to a probabilistic model of market risk factors used to assess counterparty potential exposure over a certain time horizon and with a certain statistical confidence level. The more traditional and commonly used VaR concept refers to "risk of loss" which is not equivalent to the concept of potential exposure: credit losses only occur if exposures and default occur simultaneously. Within this letter, we use the term “VaR-based” method or measure to refer to the methodology outlined within the 17 April Letter.

Simplification of the Formula for Collateralised Transactions

The 17 April Letter proposes to simplify the way haircuts are applied to collateral at the individual transaction level. The Associations note that the effect of the proposals is to modify the formula for applying collateral under the Comprehensive Approach (CP2, Paragraph 85), as follows:

$$E - C/(1 + H_E + H_C + H_{FX})$$

becomes

$$E - C + (EH_E + CH_C + CH_{FX})$$

The simplified formula recognizes the essential equivalence between haircuts and add-ons and thereby facilitates the application of a similar approach to both credit risk in repo-style transactions and other types of counterparty credit risk. Although the result of applying either formula will be numerically similar, the Associations believe the change represents an improvement.

Concern over the application of the exposure haircut/add-on (H_E).

The 17 April Letter states that exposure in the simplified formula be “grossed up, *where appropriate*, by a haircut reflecting volatility in the market price of the exposure” [emphasis added]. The Associations understand that H_E is meant to cover volatility in the collateralised asset, but suggest that the proposal would benefit from clarification of what would not be considered appropriate. The Associations believe, for example, that it would not be appropriate to apply H_E to a collateralised loan if the loan is not marked to market. In addition, applying the H_E factor to a collateralised swap exposure would overlap with the add-on factor already present in the calculation of these exposures. It should be clarified that the H_E

factor would not apply in such cases.

Finally, the proposed formula ignores the risk-reducing benefits of diversification by implicitly assuming perfect negative correlation between collateral and the underlying exposure. The proposal is neither realistic nor will it encourage diversification of a financial institution's trading portfolio. ISDA and LIBA have previously proposed using the greater of H_E or H_C to measure exposure for repo-style transactions in the trading book, and suggest that the Subgroup consider including this alternative.

Repo-Style Transactions and Holding Periods

The Associations believe that, as a general matter, assuming a five-day holding period is reasonable for repo style transactions given current collateral practices. We would like to clarify our understanding of the effect of this change in the context of the haircut approach, which we believe amounts to replacing the equation set forth in Paragraph 98 of CP2, as follows:

$$H = H_{10}\sqrt{\frac{N+9}{10}} \text{ becomes } H = H_{10}\sqrt{\frac{N+4}{10}} = H_5\sqrt{\frac{N+4}{5}}$$

The Associations recommend, however, that the Accord leave the determination of a holding period to the discretion of national supervisors, with an understanding that regulators separately agree to a common standard for the exercise of such discretion. This approach would permit the holding periods to vary across transactions, and over time reflect differences in and the evolution of risk mitigation practices.

Master Netting Agreements for Repo-Style Transactions

The Associations agree with the Subgroup that "applying a transaction-by-transaction capital charge to a portfolio of repo-style transactions with a single counterparty" is inconsistent with the salutary risk-reducing effects of master netting arrangements. We are concerned, however, that the Subgroup's proposal to allow netting at the security level (where an internal model approach is not used) does not fully account for the offset of risks actually realised in such transactions. For example, a financial institution does not usually repo or lend securities to one counterparty and reverse in or borrow the same securities from the same counterparty. Netting at the security level is therefore likely to be only a modest improvement over netting at the transaction level.

Within an internal models calculation, netting operates at the level of risk factors, not of individual securities. For example, interest rate risks arising from government securities of differing maturities will be partially or wholly netted off. FX positions will similarly be netted across securities. A standardised netting proposal that does not recognise the offsetting of risk exposures at the risk factor rather than at the security level provides limited recognition of and incentives for adoption of netting.

Own Internal Estimates of Haircuts

The Associations welcome the decision of the Subgroup to expand the range of institutions that are eligible to use their own internal estimates to calculate haircut levels for collateralised transactions. We respectfully suggest, however, that the Subgroup seek to ensure that the costs of complying with the standards for review of such haircuts be commensurate with the degree of credit risk at issue. We further suggest that the level of sophistication required to adopt such standards is kept at a reasonable level. The standards should offer a realistic intermediate regime between supervisory haircuts and VaR modelling, which would encourage institutions to migrate towards more risk-sensitive capital measures.

VaR-Based Measure for Repo-Style Transactions

The Associations appreciate the Subgroup's decision to permit the use of internal models for securities financing transaction portfolios. Our members have used a range of models for capital allocation and credit risk pricing in such portfolios, and welcome the recognition of models for potential counterparty exposure measurements as well. While most of our members believe that Expected Positive Exposure is the best approach for integrating potential exposure into the IRB framework, we acknowledge that a VaR approach is considerably more risk sensitive than a standardised haircut method. The Associations therefore support the approval of VaR-based models for assessment of regulatory capital requirements for securities financing transactions as an interim solution, but recommend that the Accord provide financial institutions with the flexibility to develop and improve regulatory risk models over time.

Given the inherent conservatism of a VaR-based measure of counterparty exposure and the development by the industry of conceptually more appropriate measures of potential exposure, the Associations strongly encourage the Subgroup to refrain from: (1) imposing an ex ante multiplier greater than one in the context of a VaR-based capital requirement, (2) setting out a specific calculation method for loan-equivalent exposure for secured financing transactions, and (3) mandating a detailed backtesting regime or ex post multipliers based on such regime. The remainder of this section sets out our arguments in more detail.

Conservatism of a VaR Approach

It is the Associations' understanding that "VaR" in the 17 April Letter refers to a method of measuring potential future counterparty exposure, using a 99th percentile, one-tailed confidence interval, and assuming a five day holding period. The Associations believe that this VaR-based method is an overly conservative measure of counterparty risk for the following reasons.

1) On an individual counterparty basis, the VaR-based measure of exposure is far higher than a loan-equivalent measure to which risk weights should be applied. This asymmetry arises in part because the VaR-based method treats a <u>potential</u> exposure amount (which is unlikely to be realised) as equivalent to a loan exposure (which exists with certainty). Further, the VaR approach fails to recognise that, for a given portfolio volatility, the more current exposure exceeds zero, the less the incremental credit risk that arises from fluctuations in portfolio value. This exacerbates the asymmetry effect because exposure can fall as well as rise when current exposure exceeds zero.
2) The risk-weights have already been calibrated to a 99.9% confidence level. The combined effect of measuring counterparty risk by using a 99th percentile VaR measure with the IRB function's 99.9th percentile loss distribution target results in an overly conservative measure of exposure. There is, in general, no reason why market and credit risk factors should conspire to produce such a result.
3) Summed across counterparties, the VaR-based method ignores the diversification across individual counterparty exposures and implicitly and effectively assumes perfect correlation among all counterparty exposures. Diversification occurs, for example, when an exposure on one side of a matched book offsets another counterparty's exposure on the other side. In addition, many counterparties have positions that are not strongly correlated with either side of the matched book.
4) The five-day exposure measurement horizon is substantially longer than the liquidation horizons

suggested by regular practices in those markets.

Imposition of an Ex-Ante Multiplier is Inappropriate

The 17 April Letter mentions the possibility of imposing a multiplier, possibly equal to three or more, on VaR used for exposure measurement. Such a multiplier could take two forms: It be imposed ex ante regardless of the results of backtesting and model validation; or it could be imposed ex post as a penalty or to remedy apparent defects which have been revealed by backtesting or model validation of an institution's calculation.

The Associations strongly oppose the imposition of an ex ante multiplier. First, there is no conceptual foundation for such a multiplier. Second, in practice an ex ante multiplier greater than one would exacerbate the unduly harsh treatment of credit risk in securities financing transactions relative to loan credit risk that we mention above. To go even farther by imposing an ex ante multiplier of three would produce a capital requirement far beyond any reasonable *minimum* capital requirement.

The Associations also oppose the imposition of an ex post multiplier as a penalty for exceptions to a backtesting procedure; we describe our reasoning under "Backtesting VaR-based Measures." The Associations recognise, however, that the Subgroup is considering a backtesting regime. We therefore outline below a backtesting methodology and an ex post multiplier table.

Accord Should Maintain Flexibility

The Associations believe that the Accord itself should not mandate the use of specific models of potential counterparty exposure. Instead, we suggest that the Accord provide flexibility for internal models to be adapted to the specific risk characteristics of a firm's portfolio and to evolve over time as risk exposures change and risk measurement methods improve. More specifically, the Accord could require that a firm calculate the "loan equivalent" value for credit exposure arising from its securities financing transactions. The loan equivalent exposure would then be treated as a loan exposure under the Accord. National supervisors would review and either approve or disapprove the particular models proposed by firms to calculate their loan equivalent exposures.

This approach is similar to many regulators' current treatment of derivatives pricing models in the context of regulatory capital for current exposure. The supervisor reviews the theoretical adequacy and practical efficacy of a pricing model but does not mandate the details of model structure a priori. The model's valuations are a central determinant of the capital requirement for current credit exposure for transactions covered by the model.

In the context of repo-style transactions, an optimal balance of standardisation and flexibility might involve supervisors agreeing among themselves on more detailed model requirements (initially a VaR-based measure with a particular confidence level and time horizon) outside the Accord. A major benefit of this approach is that standards could evolve as appropriate over time without the need to undertake a cumbersome modification of the Accord.

Backtesting VaR-based Measures

The Associations do not support inclusion in the Accord of a backtesting regime or of an ex post multiplier as a penalty. As the Subgroup recognizes in the 17 April Letter, the backtesting required for market risk VaR is not necessarily appropriate in the context of measuring counterparty risk in repo-style transactions.

Model Validation is Appropriate Method of VaR Model Approval

The Associations suggest that, instead of a specified backtesting regime, the Accord provide for a system of model validation that is capable of evolving over time to reflect ongoing improvements in risk measurement methods. Model validation would include regulatory review and approval of models used in the calculation of regulatory capital for secured financing transactions. There are precedents to such an approach, including the model validation performed now by most regulators for valuation models. Another precedent is the approach outlined in Paragraphs 230 and 231 to the Internal Ratings Based Approach Supplement to CP2, which expresses the intention to develop internal ratings validation methods without prescribing a particular approach in advance. The Accord should similarly avoid a prescriptive approach to backtesting, and instead provide national supervisors with principles to follow when reviewing a financial institution’s model for approval.

Suggested Backtesting Method

If a prescriptive backtesting approach is deemed necessary to validate a VaR counterparty risk model, the Associations suggest the following backtest, which would be performed annually:

- At the beginning of a quarter, the institution identifies the 20 counterparties to which it has the largest credit exposure (based on internal measures) and 20 other randomly selected counterparties.
- For each day in the succeeding quarter, a random counterparty is selected from this group of 40.
- The financial institution, which maintains daily activity data for its VaR calculations, measures (1) that day’s change in the value of the counterparty’s exposure, “cleaned” to strip out any collateral flows for the day, and (2) the VaR calculated as of the previous close of business for such day for such counterparty.
- An exception occurs for each day on which “cleaned” P/L exceeds VaR.
- In the “hard” form of the test (see below), the table of ex post multipliers on the following page would apply in the case of different numbers of exceptions.

Table of multipliers. The Associations propose the following.

Number of exceptions	**Significance**	**Multiplier**
0	91.80	No action necessary
1	71.30	No action necessary
2	45.60	No action necessary
3	24.60	No action necessary
4	10.90	No action necessary
5	4.20	1.13
6	1.40	1.17
7	0.40	1.22
8	0.10	1.25
9	0.03	1.28
10	0.01	1.33

Significance is the probability of a properly functioning model arriving at a given number of exceptions (violations) purely by chance (rather than the model not functioning properly).

If the number of exceptions exceeds ten, there will be a presumption that the model is not functioning properly. Banks will calculate a multiplier according to the formula described below, subject to national supervisory discretion to set it higher. The new multiplier will remain in effect until the earlier of: (1) supervisors approve a revised model; or (2) six months has passed, after which banks will be required to calculate capital using standardised haircuts.

The multiples in the above table are derived by in a manner analogous to those used in the 1996 Market Risk Amendment scaled according to the following formula:

$$Multiplier = \frac{2.33}{\left(F^{-1}\right)\left(1 - \frac{X}{N}\right)}$$

where:

F = the cumulative distribution function for the normal distribution

X = number of exceptions (assuming 5 or greater)

N = number of observations.

In drawing up this suggestion the Associations considered the following two considerations, which effectively restrict the range of possible backtests to the procedure suggested above.

- *Statistical power*. In the backtesting regime for market risk, significance (in effect, severity) is assigned to each possible number of exceptions based on the probabilities of certain outcomes having the binomial distribution. The application of this distribution is broadly acceptable because individual days from the time series can reasonably be considered to be independent. To be able to make a corresponding assumption here, it is necessary to construct a backtest in which *only one counterparty is tested on each day*.
- *Practicality*. The amount of data involved in backtesting a single counterparty in the current context would be comparable to the total work involved in a market risk backtest over the same time period. Based on the Associations' knowledge of the resources required for a market risk backtesting regime, we believe it would be neither practical nor cost effective to mount a similar effort for securities financing transactions.

A compromise approach

To overcome the drawbacks of the proposed backtest while retaining its useful features, we propose the following alternative approach.

- Firms will be required to gain approval for their risk measurement model validation procedures. The backtest proposed above could form part of this model validation procedure, but need not be applied precisely in the form proposed above. In particular, a bank supervisor might select counterparties of particular concern or interest. It is important to note, however, that in this "soft" form the backtest should not be linked directly to multipliers as proposed in the above table.
- If a firm cannot gain approval or if it chooses not to develop a validation procedure, then it could be made subject to the full backtest above including the table of multipliers.

Residual Risks

The Associations welcome the decision of the Subgroup to address residual risk in the Pillar 2 supervisory review process of the Accord. We affirm our commitment to assist the Subgroup in developing a robust framework in Pillar 2 for addressing residual risk.

The Associations appreciate the Subgroup's request for comment on the 17 April Letter and their willingness to consider our response. We sincerely hope the comments will be useful to the Subgroup's deliberations, and look forward to further dialogue on these important issues. If you have any questions regarding our response, please feel free to contact any of the undersigned.

Yours sincerely,

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