

**Response to U.S. Agencies' Joint Notice of Proposed Rulemaking:  
Risk-Based Capital Standards;  
Recourse and Direct Credit Substitutes**

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## **Comment on the U.S. Agencies' Proposal Regarding Capital for Recourse and Direct Credit Substitutes<sup>1</sup>**

### **I. Introduction and Overview.**

Robert Morris Associates welcomes this opportunity to comment on the U.S. banking agencies' Joint Notice of Proposed Rulemaking regarding "Risk-Based Capital Standards; Recourse and Direct Credit Substitutes" (February 17, 2000). By way of commenting on this proposal, we are also expanding upon our response to the Basel Committee's Consultative Paper on Capital Adequacy (RMA Response dated March 31, 2000) in the area of regulatory capital requirements for securitization tranches.

Our overall reaction<sup>1</sup> to the U.S. agencies' proposal is, with the exception of its proposed treatment of capital for Asset-Backed Commercial Paper Facilities (ABCPs), one of some disappointment. In particular, the agencies' proposal, while nominally "risk-based" in that capital would depend primarily on external ratings of credit enhancements, nevertheless is essentially subjective in its capital allocations for each rating category. Indeed, the agencies' proposed allocations consist of the Accord's current 20%, 50%, and 100% risk-weights (for grades AAA/AA, A, and BBB respectively) with an additional risk-weight of 200% for credit enhancements rated BB. Because these allocations are arbitrary, they typically would bear little relationship to best-practice estimates of economic capital -- a primary reason why an intensive effort is underway to revise the Basel Accord to make it truly risk-sensitive and truly reflective of best-practice estimates of economic risk.

Thus, we strongly urge the U.S. agencies to delay implementation of a final rule regarding capital for credit enhancements until a rational Accord can be constructed. Further, we believe that an appropriate next iteration of the Accord should be based on internal, not external, credit risk ratings -- for all of the reasons given on pp. 13-16 of our March 31<sup>st</sup> Response to the Basel Committee (which is attached as Appendix 1 to this

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<sup>1</sup> Some of the banks participating in the RMA group will provide individual responses to the agencies' proposal that may include issues not addressed within the RMA response or which vary from the positions

document). As indicated in our previous Response, we believe that regulatory capital requirements should be based on objectively-determined internal estimates of certain important *risk characteristics* of each loan facility, including estimated expected default frequency (EDF), estimated loss-given-default (LGD) -- and possibly other risk factors such as term (duration). Reliance on ordinal letter grades (rather than numerical estimates of EDFs, LGDs, etc.) is not only less accurate but also more costly because it requires the establishment of complex concordance schemes that relate each bank's internal rating system to some common system against which regulatory capital is allocated. It would be consistent with this view to base appropriate portions of the U.S. proposal regarding capital for credit enhancements on such internal risk characteristic estimates -- provided, of course, that qualifying banks have supervisor-approved processes for estimating risk characteristics such as EDF and LGD.

At this time we would like to repeat, in summary fashion, some of our major concerns expressed in our March 31<sup>st</sup> Response to the Basel Committee. This is because such concerns are equally applicable to the setting of minimum capital requirements for ordinary on-balance-sheet credits as well as the setting of requirements for credit enhancements. We agree wholeheartedly with the U.S. proposal's view that, conceptually, capital requirements for credit enhancements of all types -- whether in the form of recourse on assets sold into a bank-sponsored securitization facility, or in the form of a "direct credit substitute" (an enhancement on assets originated directly by the facility or sold by a third party to the facility) -- should be the same when the risks are equivalent. However, the particular implementation of this view needs to be carefully considered in the context of a world in which current regulatory capital requirements for on-balance-sheet assets are quite arbitrary and, in many cases, contribute to the necessity of banks engaging in costly regulatory capital arbitrage (RCA). There are three sets of issues, and corresponding principles, that we think should guide regulators with respect to the timing and construction of capital requirements for credit enhancements.

First, regulators should avoid taking the view that all regulatory capital arbitrage is "bad" from a social perspective. As Chairman Greenspan has indicated, such arbitrage

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taken by RMA in the response. Appendix 3 provides a list of the banks and staff participating in this

"acts as a safety-valve" in cases when arbitrary on-balance-sheet regulatory capital requirements might preclude the bank from engaging in a low-risk, socially desirable lending activity (because returns to such regulatory capital would be too low).<sup>2</sup> The agencies appear to have remembered this admonition when crafting the proposal for ABCP facilities, which is structured to reasonably follow, at least in principle, best-practice internal procedures for allocating capital. But the proposal regarding capital for "managed assets" (in securitizations containing early amortization clauses) appears to retreat to a less enlightened view -- one in which RCA is "bad" and must be penalized. In this latter case, the proposed rules would simply add on an arbitrary 1.6% capital requirement for the off-balance-sheet components of such facilities. In this instance, the agencies appear to disregard the fact that a major reason why such securitization facilities exist in the first place (most notably credit card receivable facilities) is because the Accord's requirement against the on-balance-sheet assets is significantly in excess of best-practice estimates of appropriate economic capital.

A second guiding principal for regulators, in our view, should be to move, wherever possible, to setting capital requirements based on a rigorous standard for bank soundness. In our earlier response, we suggested that capital requirements be chosen so as to set a ceiling on the probability of bank insolvency over a given horizon. We even suggested a specific numerical ceiling for insolvency probability -- one-half of one percent over a one-year horizon. Using modern economic capital measurement techniques, based on ever-improving loan performance databases, this sort of decision-rule could provide regulators with specific guidance as to the numerical levels for appropriate minimum capital requirements. Unfortunately, the published proposal seems to suggest that the agencies are content instead with setting capital requirements in ordinal fashion. That is, each specific proposal is couched in terms of it being higher than or lower than the standard 8 percent Accord requirement. To provide a specific example of the shortcoming of such an approach, consider the proposed capital requirements for externally rated positions. Yes, we agree that a double A-rated position should have a

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response.

capital requirement that is significantly lower than for a BBB-rated position. But should the capital requirement for the BBB-rated position be 8 percent (the Basel standard)? And should the capital requirement for the double A-rated position be 20% of that arbitrary 8 percent? In fact, the research provided within our March 31<sup>st</sup> Response suggests that, in many cases, such capital requirements, if consistently applied and without the "safety-valve" of capital arbitrage, would drive bank soundness to levels that are *too high*. Under such circumstances, banks could not earn market returns on capital and would not be able to "maximize their value to the overall economy."<sup>3</sup>

A third guiding principle, in our view, should be that optimal capital *regulations* can only be achieved in an environment of sound, intensive *supervisory* practices. To make this point further, we quote our original Response to the Basel Committee.

"Appropriate capital standards will necessarily vary from bank to bank, depending on several factors, including but not limited to a) internal processes for identifying and working out troubled assets, b) the quality of internal risk controls (which are at least as important as capital as a defense against possible losses), and c) the specific size and diversification of the portfolio in question. Thus, theoretically correct capital allocations for a particular asset -- even when the same asset is held by two or more banks via participation -- will differ institution to institution. That is why bank-by-bank supervision, in countries that have meaningful supervisory processes, is likely to achieve reasonably-defined safety and soundness objectives with far greater success than can a regulation, no matter how complex, that applies equally to all banks, no matter how diverse."

Thus, the best capital regulation is one that has embedded within it a significant supervisory element. The U.S. agencies' proposal appears to recognize this dictum when dealing with capital for ABCP facilities. That is, the proposal allows for the use of *internal* ratings, with significant supervisory oversight of the ratings process. Of course, the clear benefits of such an approach could be applied to other facilities as well. The

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<sup>2</sup> See "The Role of Capital in Optimal Banking Supervision and Regulation," Remarks by Alan Greenspan before the Conference on Capital Regulation in the 21<sup>st</sup> Century, Federal Reserve Bank of New York, February 26, 1998.

<sup>3</sup> *Ibid.*, p. 8. Note that best-practice estimates of the effects of holding 8 percent capital against a portfolio of BBB loans would be to drive bank soundness to AAA+ levels.

only reason for not doing so is if the particular supervisory regime in question is not capable of assessing advanced-practices for estimating risk characteristics of credit positions. This is clearly not the case in the U.S. and, therefore, we urge the U.S. supervisors to take the lead in using internal ratings, while at the same time promoting the improvement of supervisory capabilities in all the G-10 countries. An important element of this process would be to set regulatory capital requirements for credit enhancements that reflect best-practices and that, therefore, incorporate supervisory-approved internal estimates of key dimensions of risk.

The importance of the principles laid out above should become evident as the reader proceeds through this Comment. Section II below provides a description of the internal processes used by our members to assess economic capital for credit risk for various credit enhancement positions. Section III applies this knowledge to an analysis of each portion of the agencies' proposal, with a resulting set of alternative recommendations. Section IV provides some concluding comments.

## II. Internal Economic Capital Allocation Procedures for Credit Enhancements.

A survey of our members indicates that internal economic capital estimates for credit enhancements flow from procedures that may vary according to the type of securitization facility (and, in particular, the degree of subordination of the bank's credit enhancement position). Additionally, there is some degree of diversity across member banks with regard to the specifics of the capital estimation process. We view this diversity as healthy and indicative of the intent of the industry to continually reassess practice in order to improve best-practice procedure. Technical advances in credit risk measurement are continuing, and dissemination of such practices will always be less than instantaneous. Moreover, more than one practice may constitute best-practice, depending on the specifics of portfolio construction, availability of appropriate loan performance data, and internal credit granting, credit review, and workout procedures. Thus, we would expect that diversity of economic capital measurement will and should continue.

ABCP Facilities. Our banks' sponsorship of such facilities generally entails two forms of support for the facility -- liquidity facilities extended to the securitization facility

and/or to individual obligors participating in the securitization facility; and direct credit enhancements (often in the form of subordinated loans) to the facility that help improve the credit rating of the trust's issued securities.

Liquidity facilities, generally short term in nature, are usually treated for economic capital purposes as any other liquidity facility offered by the bank to its commercial customers. That is, the bank assigns an EDF and LGD to the facility as well as a loan-equivalent-amount (LEQ) in order to arrive at an economic capital allocation. Generally, due to the rarity of draws and the short-term nature of such facilities, the assigned LEQs are relatively low. Also, due to several factors -- including over-collateralization and termination clauses that allow for liquidation of the asset pool (coupled with detailed reporting requirements) -- the obligors (the CP facilities themselves) are judged to have high credit quality and low estimated LGDs. For these reasons, the economic capital allocations associated with the liquidity facilities are usually on the order of only a few basis points. Therefore, it would be appropriate to keep the regulatory capital allocation at essentially zero (by continuing to assign a zero LEQ to such liquidity facilities).<sup>4</sup>

Direct credit enhancements for ABCP facilities often take the form of subordinated loans or their equivalents. Because the loan to the trust is subordinated, it provides credit protection to all the more senior securities issued by the trust. Generally, our members assign economic capital to such credit enhancements in similar fashion to that of any commercial loan. In some systems this calls for assigning estimates of EDF, LGD, LGD volatility, and  $\rho$  (default correlations) to the subordinated loan and then plugging these parametric estimates into the bank's economic capital model. In other systems, only EDF and LGD are assigned. In a few instances, an ordinal credit grade or rating is assigned and then capital allocated against the credit enhancement as against any other commercial credit of the same internal rating.<sup>5</sup> In general, fairly favorable EDFs,

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<sup>4</sup> Theoretically, the proper economic capital allocation, however small, will be positive. But the general premise of capital regulations is that they are minimums; banks should also hold higher than the minimum capital requirements. When best-practice economic capital is only a few basis points, the only practical place to set the regulatory minimum is at zero.

<sup>5</sup> Strictly speaking, any credit enhancement of a given estimated EDF and LGD should exhibit greater LGD volatility than any asset in the pool underlying the securitization facility (with the same EDF and LGD). This is because a given percent increase in pool losses implies a higher percent increase in losses on the credit enhancement. For example, an enhancement covering pool losses of 5 percent of pool assets (and

LGDs, and other risk characteristics are assigned to these credit enhancements -- driven largely by the protection afforded by the underlying structures (including over-collateralization).

Securitized master trusts with early amortization features. Such transactions involve primarily credit card receivables trusts, but also extend to home equity line of credit (HELOC) trusts and some CLOs (collateralized loan obligations) in which revolving lines of credit are securitized via a master trust. In general, our member banks tend to treat these securitization facilities -- in terms of their impact on economic capital -- as transferring essentially *no* credit risk to the security holders. That is, credit risk is deemed to reside with the sponsoring bank, as if the underlying credits had never left the balance sheet. The early amortization clauses associated with many of these facilities is only one form of "credit enhancement" that may underlie the decision to treat the managed assets as residing on the books of the bank, for economic capital purposes. That is, the early amortization clause -- a form of "indirect" enhancement<sup>6</sup> -- may be accompanied by other, direct forms of enhancement, such as booked excess spread accounts whose value could decline or disappear under sufficiently adverse performance of the underlying credits.

Of course, when our advanced-practice banks assign economic capital to such facilities (as if the underlying credits had not left the bank's books), they *do not* use the Accord's 8 percent standard. Neither do they use the arbitrary standard within the agencies' recent proposal -- 8 percent against the on-balance-sheet portion plus 1.6 percent against the off-balance-sheet managed assets. Rather, for retail credits, historical credit performance data are used, in effect, to estimate a credit loss distribution for the underlying credits. From this distribution, economic capital is estimated to "cover" a

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which was in "default") would have its loss rate increased by 20 percent of its notional value for every one percentage point increase in pool losses. Thus, economic capital for a credit enhancement of a given EDF and LGD should generally be somewhat higher than for an ordinary loan of the same EDF and LGD. This is not an important issue with respect to ABCP facilities, as opposed to other types of securitization, because of the collateralized, short-term nature of the underlying pool assets in ABCP transactions.

<sup>6</sup> The agencies' proposal states that "early amortization can create liquidity problems for the seller." While we don't deny the presence of such liquidity/funding risk, we do not view capital as the solution but rather would rely on appropriate liquidity management techniques. We agree, however, that there is credit risk associated with early amortization features and that economic capital is appropriate protection against such risk.

certain percentage of the loss distribution (the coverage percentage, as in the commercial credit arena, generally is 99.5% to 99.95%). The economic capital allocation will differ by product type (for example, credit cards versus first mortgages versus HELOCs) and by one or more dimensions of risk, such as estimated EDF (often proxied by FICO score). Thus, the economic capital estimation process for retail assets (whether or not they are securitized) is similar to the economic capital estimation process for commercial credits (whether or not they are securitized). Fortunately, robust historical performance data for retail credits are more available and more detailed than is the case for commercial credits.<sup>7</sup>

A forthcoming RMA survey document will provide regulators with a detailed description of internal economic capital allocation processes for retail credits. In addition, a survey to be conducted will provide actual economic capital allocations (medians and quartile break-points) across a wide variety of retail products. We urge the U.S. agencies' to delay implementation of their proposed capital rules for securitizations until this survey is completed -- and until these best-practice estimates of capital find their way into the underlying regulatory requirements for on-balance-sheet assets.

Securitizations involving "first-dollar" loss protection provided by the sponsoring bank, but involving no early amortization clauses. Most securitizations that do not fall under the previous two categories generally involve so-called "first dollar" loss protection provided by the sponsoring bank. Examples of such credit enhancements include ordinary recourse, a booked excess spread account, a funded cash collateral account, financial guarantees, or the retention of a subordinated tranche (usually in combination with one or more of the other forms of credit enhancement).

For securitization facilities of this type, our member banks generally arrive at economic capital allocations in the following manner. First, economic capital is calculated for the entire pool of assets underlying the securitization facility. Next, the notional dollar amounts of all the first-dollar (plus second dollar) loss protection provided by the bank are aggregated. Economic capital for the securitization transaction is then set

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<sup>7</sup> It should also be noted that some of our members, while assuming that no credit risk is transferred to security holders in a master trust involving early amortization, nevertheless believe that such treatment is

at *the lower of* the economic capital for the underlying pool assets *or* the dollar amount of contractual credit protection provided by the bank. In cases where the dollar credit protection exceeds the estimated economic capital on the underlying assets, the bank is meeting its, say, 99.95% "coverage" standard (coverage of the loss distribution) by holding exactly the amount of capital it would have held had the assets remained on its books. In cases where the maximum contractual loss liability of the bank is lower than economic capital on the underlying assets, the bank is meeting a 100% loss coverage standard (capital to cover all possible loss contingencies) by holding capital equal to the contractual limit of its credit enhancements.

This rule, in common use across our advanced-practice banks, is similar in construction to the current "low-level recourse rule" of the U.S. banking agencies. That is, regulatory capital is set at the lower of the amount of credit protection provided on the underlying assets or the amount of capital on the underlying pool as if they were held on the balance-sheet. However, the current regulatory low-level recourse rule relies on capital allocations against balance sheet assets that are arbitrary (either 8 percent or 4 percent, in the case of assets typically securitized). The advanced-practice banks, meanwhile, are attempting to rigorously measure credit risk and are assigning economic capital based on those measurements.

Subordinated positions and other "second-dollar" credit enhancements. In some instances, an advanced-practice bank will assume a so-called "second-dollar" loss position, either on assets securitized by another financial institution or on its own sponsored securitization facility when first-dollar losses are being absorbed by others or are covered by devices such as overcollateralization. These credit enhancement positions might take the form of a subordinated (but generally not traded) security, a financial guarantee, or subordinated loan. Certain credit derivatives and subordinated tranches in CLO structures are other examples.

Such positions generally are assigned economic capital allocations in keeping with the bank's procedures for estimating capital for commercial credits. That is, the positions would be internally rated and risk characteristics such as EDF, LGD, LGD

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overly conservative. That is, not all of the securities issued by such trusts are AAA related. Thus, some

volatility, etc., would be estimated. These risk characteristics would then be plugged into the bank's economic capital model or, in some circumstances, the bank would simply assign the same capital to such a position as it would to a commercial credit with the same rating (or the same EDF-LGD combination).

Senior, highly rated positions. Senior tranches -- those typically rated AAA or AA -- are treated essentially the same as subordinated positions. That is, the bank would internally rate the position, estimate its risk characteristics (EDF, etc.), then assign economic capital accordingly. We discuss these positions separately, not because they differ conceptually from other credit positions but because the U.S. agency proposal suggests a capital allocation against them that is all out of proportion to best-practice economic capital. In particular, the agency proposal assigns 1.6 percent capital to AAA/AA rated senior positions. However, in practice, such positions attract the lowest EDF and LGD estimates and, therefore, are typically assigned economic capital of only a few basis points. Appendix 2, Table 1 replicates the survey of economic capital allocations among our members (as provided in the RMA March 31<sup>st</sup> response to Basel), delineated by 110 "cells" of EDF range and LGD range. AAA/AA-rated senior positions typically would be assigned to the EDF-LGD cells in the very upper left hand portion of the matrix in Table 1 (the first EDF "grade" and the first two LGD ranges). See Table 2 in Appendix 2 for a correspondence between our members' EDF-LGD ranges and Moody's public ratings. Median economic capital assignments for these highly-rated assets range from 5 to 15 bp. In other words, the agencies' proposal represents a regulatory capital assignment that is from 10 to 32 times the best-practice estimates of economic capital.

This comparison highlights the apparent interest regulators have in focusing only on *ordinal* capital requirements. In effect, the U.S. regulators are saying, "We understand that a AAA asset is less risky than a BBB asset. We have thus lowered the regulatory requirement for the AAA asset from 8 percent to 1.6 percent. What more do you want from us?" The answer, of course, is that we prefer that the regulators drop this ordinal approach based on arbitrary decreases or increases from the equally arbitrary 8 percent

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reduction in economic capital is appropriate. Measurements of these reductions are in their nascent stages.

figure. Indeed, 8 percent capital held against BBB-rated assets (those assets found in rows 2 and 3 in Table 1) would be, at an assumed LGD in the 40-50% range, approximately 7 to 15 times the best-practice estimate of economic capital for credit risk. Lest regulators think that all we want is lower capital, please refer to the cells in the lower, right-hand portion of Table 1. Best-practice estimates of economic capital for assets with high EDFs and/or high LGDs range well above 8 percent, going as high as 32 percent (for the median capital allocation across our 11 respondents).

### III. Analysis of Proposal and Recommendations.

We believe that an appropriate analysis of the various portions of the agencies' proposal flows directly from the descriptions of best-practice economic capital estimation in Section II above. Appropriate alternative recommendations also flow directly from current advanced-practice estimation of economic capital.

ABCP Facilities. The proposed treatment of direct credit enhancements associated with bank-sponsored ABCP facilities would rely on internal ratings. We agree in principle with this approach. The particular capital allocations chosen within the agencies' proposal may, however, be too high in comparison with best-practice measurement of credit risk (see discussion in previous section). Furthermore, we can envision cases where a "cliff-effect" could be further avoided by creating an additional internal rating bucket -- the single-B bucket. To this bucket, regulators could assign an appropriately high capital requirement against the notional amount of the direct credit enhancement. Credit enhancements for ABCP facilities that are internally rated below single-B would receive, as in the proposal, full "gross-up" treatment.

The U.S. agencies' proposal regarding ABCP facilities is silent on the issue of liquidity facilities. We do not read anything into this silence, but do wish to point out that the advanced-practices of our members result generally in miniscule capital allocations against such facilities, often just a few basis points. As noted earlier, since banks should hold more capital than required by the minimum regulatory capital standards, it therefore would be most practical to simply retain the current treatment of such facilities (a zero LEQ for regulatory capital purposes).

Managed assets within master trusts containing early amortization features. The proposal would simply add a capital requirement to the off-balance-sheet ("investor's interest") managed assets portion of such securitizations -- a 20 percent risk-weight -- without changing the treatment of the on-balance-sheet portion ("seller's interest"). This treatment could be especially onerous for credit card facilities that may result in fairly low economic capital allocations for the underlying receivables.

To provide a specific example, suppose that a best-practice estimate of economic capital is 2 percent of the underlying. Under current regulatory capital rules, the bank can achieve equality of economic capital with regulatory capital by structuring a securitization in which 25 percent of the receivables remain on the books as the seller's interest. That is, the current regulatory capital requirement would be 8 percent against 25 percent of the underlying card receivables. Under the agencies' proposal, however, the regulatory requirement would rise to 3.2 percent of the receivables -- 8 percent against 25 percent of the underlying, plus 1.6 percent against 75 percent of the underlying assets. In other words, the proposal would result in a minimum regulatory capital requirement that was 60 percent higher than a best-practice estimate of economic capital -- resulting in the credit card receivables generating insufficient returns to bank capital. Absent some other way for the bank to engage in regulatory capital arbitrage for this type of credit, the institution would have to exit the particular credit card business in question. Thus, the proposal as it stands could have significant resource allocation effects on credit card markets.

The RMA Securitization Group believes that, in order of their appearance, the following recommendations would be preferable to the proposed treatment of capital for managed assets in master trusts.

1. Delay implementation of the managed assets rule until regulators have a full appreciation of appropriate economic capital allocations for a wide range of credits that typically are securitized using such structures. Then, change the regulatory minimum capital requirements for on-balance-sheet assets in these categories to reflect best-practices. As indicated above, and in our March 31<sup>st</sup> response, these new underlying capital standards should fully reflect the wide

range of credit product types and risk characteristics (EDFs and LGDs) that are commonly recognized within bank risk measurement practices. Then, and only then, should the regulatory capital arbitrage opportunity associated with master trusts be eliminated, by requiring that off- and on-balance-sheet credits be assigned the same minimum capital standards.

2. Alternatively -- if the U.S. regulators wished to proceed sooner rather than later -- capital for master trusts with early amortization features could constitute a test-case for the use of internal economic capital methods. That is, upon receipt of supervisory approval on a bank-by-bank basis, approved banks could use their internal economic capital estimates as their minimum capital requirements. This approach might best be implemented if the approved banks were required to compute economic capital both at the soundness standard used within their internal models and at the lower soundness standard required by the regulator. That is, suppose the bank allocates economic capital internally so as to reduce to 0.05 percent over a one-year horizon the likelihood that credit losses will exceed allocated capital. Suppose further that regulators set their own minimum soundness standard to be consistent with a 0.5 percent probability of insolvency over a one-year horizon. The bank would compute economic capital at the regulatory level (99.5 percent coverage of the loss distribution), then recompute economic capital at its own higher coverage standard (say, 99.95 percent). The difference in the resulting two capital levels represents the degree to which the bank is holding capital in excess of the regulatory minimum.

Of course, implementation of an internal-economic-capital-based regulatory standard would require that supervisors develop validation and review procedures for internal economic capital models. We believe that this process would be much less burdensome than generally supposed. However, due to resource limitations associated with the body of ongoing survey work we are conducting, we can not now offer specific suggestions regarding

supervisory review and validation procedures. We hope to be able to offer an analysis of this issue later in the calendar year.

Credit enhancements involving other than ABCP facilities or master trusts with early amortization features. As we understand the agencies' proposal, all other forms of credit enhancement -- whether in the form of recourse or direct credit substitutes, and whether constituting first-dollar loss protection or second-dollar loss protection -- would receive regulatory capital treatment based on external ratings of the credit enhancement. If the credit enhancement is a traded position, the single highest external rating applies. If the credit enhancement is non-traded (ordinary recourse, for example), to qualify for the ratings-based approach the bank retaining the credit enhancement must purchase external ratings from two separate recognized rating agencies. Additionally, the ratings must be made publicly available, and the ratings must be based on the same criteria used to rate securities sold to the public. If the two ratings differ, the lower of the two ratings applies. If a credit enhancement is not externally rated, it would receive full "gross-up" treatment, subject to the low-level recourse rule.

As indicated in Section II above, advanced-practice banks tend to make a distinction between credit enhancements constituting first-dollar protection and those constituting true subordinated (but not "equity") positions. For first-dollar positions, the bank typically assigns economic capital that is *the lower of* the dollar amount of the aggregate of all first-dollar credit enhancements and the economic capital against all the underlying credits in the securitized pool. A regulatory rule that would be consistent with such practice would be the current low-level recourse rule, *provided that the capital treatment against the "grossed-up" first-dollar credit enhancements reflected best-practice estimates of economic capital against the underlying assets.* Thus, for first-dollar enhancements, our preferred regulatory treatment would be to delay implementation of the agencies' securitization proposal until regulatory capital for the on-balance-sheet assets is rationalized. Then, and only then, would it make sense to require

that all first-dollar credit enhancements -- whether in the form of recourse on assets sold or in the form of direct credit substitutes -- be afforded low-level recourse treatment.<sup>8</sup>

A ratings-based approach for second-dollar enhancements, however, is consistent with best-practice internal treatment of such enhancements. That is, our banks typically "rate" such positions -- or rather, assign estimates of critical risk characteristics such as EDFs, LGDs, etc. to such positions -- then assign economic capital based on those "ratings" (or risk characteristic estimates).

While a "ratings-based" capital treatment of subordinated positions (non-first-dollar credit enhancements) makes sense, we believe that such ratings should be *internally* generated, upon supervisory approval of internal ratings procedures. First, this removes the need for the bank to bear the expense of purchasing two external ratings for untraded positions (and keep paying yearly rating fees for as long as the securitization facility is in operation). Second, for reasons given in Appendix 1, we believe that internal ratings are more appropriate and more verifiable by supervisors than are ratings from a host of external rating agencies around the world. We believe that supervisors, especially U.S. supervisors, ultimately would be more comfortable with reviewing the rating practices of the banks they supervise rather than the rating practices of unregulated rating agencies that may or may not be domiciled in the U.S. Moreover, policy considerations would argue against limiting the acceptable number of rating agencies to, say, the largest three existing U.S. agencies.

More importantly, as we have strenuously argued in our March 31<sup>st</sup> Response to Basel, we believe that capital requirements are most appropriately levied based on specific, measurable *risk characteristics* -- such as EDFs and LGDs -- that may or may not be embedded within ordinal letter ratings or grades. Thus, we would prefer that any "internal-ratings" system be based specifically on EDFs and LGDs (and possibly other risk characteristics). Moreover, the resulting capital allocations assigned to each EDF-

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<sup>8</sup> We recognize that U.S. agencies may wish to move ahead with a ratings-based approach for both recourse and direct credit substitutes because of the likely long time period before a rational Accord can be constructed. While we would prefer to wait, leaving current direct credit substitute treatment unchanged in the interim, a ratings-based approach for direct credit substitutes would constitute a workable second choice if the sponsoring bank were permitted to use internal ratings, for reasons discussed in the text below (and in Appendix 1).

LGD "bucket" should be based on a specific measurable soundness standard as suggested in our March 31<sup>st</sup> Response to Basel. Table 1 in Appendix 2 below shows how our advanced-practice members actually have calculated such capital allocations, based on a specific insolvency probability standard.

Senior, highly-rated securitization tranches. We treat this portion of the agencies' proposal separately because we believe that the proposed regulatory treatment represents an exceptionally high ratio of regulatory capital to best-practice economic capital. We recognize fully that this portion of the proposal represents a significant liberalization of the current regulatory standard of 8 percent. But 1.6 percent regulatory capital is still a very high multiple of best-practice economic capital for AAA/AA-rated securities. We believe that U.S. regulators could make significant progress toward accepting modern credit risk measurement practices if this requirement were lowered still further to levels consistent with those shown in Table 1 of Appendix 2.<sup>9</sup>

#### IV. Concluding Remarks

Advanced-practice banks use securitization facilities partly to engage in regulatory capital arbitrage when the Accord's minimum capital requirements against on-balance-sheet assets are significantly above best-practice estimates of economic capital. Such banks do not engage in RCA to "avoid" prudential soundness requirements. Indeed, the internal soundness standards of these institutions -- expressed in terms of a targeted insolvency probability -- are more stringent (lower insolvency probability) than those on which a rationally-structured Accord should be based. Rather, at the arbitrarily high regulatory capital standards for some assets -- primarily certain retail credits and highly-rated commercial credits -- carrying those assets on the balance sheet would lead to an acceptably low rate of return to bank capital. The clear direction in which bank capital regulations should proceed, therefore, is to mimic the levels implied by modern best-practice measurements of credit risk (and economic capital).

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<sup>9</sup> It is also our view that the recently proposed treatment of "residual" positions in synthetic CLOs (SR-99-32a1, "Capital Interpretations: Synthetic Collateralized Loan Obligations", November 15, 1999) should be liberalized for the very same reason. That is, such residuals constitute the equivalent of AAA positions against which even a 20 percent risk-weight is out of proportion to best-practice economic capital.

Within the current proposal, the U.S. banking agencies' avowed goals are to make capital standards for credit enhancements more risk-based, and to assess equal capital for recourse and direct credit substitutes when such credit enhancements are of equal risk. We agree strongly with these goals. But there are two types of difficulty associated with the specifics of the agencies' proposal:

- 1) Internal "ratings" (or rather, internal estimates of risk characteristics) should be used to set regulatory capital minimums, rather than external, ordinal letter grades.
- 2) The capital allocations against each rating should be based on best-practice estimates of economic capital, not in relation to the existing Accord.

Even if these problems were corrected to reflect best-practice estimates of capital, the (revised) proposal would exist within an Accord that is still, in many respects, inappropriate for on-balance-sheet assets. Thus, our strong recommendation is that the U.S. *delay* implementation of even an *internal* risk-rating-based set of capital requirements for credit enhancements until the underlying Accord can be suitably revised, however long this may take.

In the meantime, there is a legitimate concern on the part of the regulators that certain banks could use securitizations to evade the unspecified soundness standards of the regulators. In our view, this problem can be handled only through appropriate and effective bank-by-bank supervision. Indeed, even when an appropriate Accord is constructed, we believe that supervisory standards should be strengthened to essentially require banks -- especially, large, complex banking organizations (LCBOs) -- to move toward best-practice risk measurement and best-practice estimation of economic capital. The Federal Reserve's recent Supervisory Letters dealing with risk measurement and management practices at such LCBOs addresses such matters, and we applaud their introduction.<sup>10</sup> We agree in general with the thrust of these supervisory standards:

- a) LCBOs should maintain internal systems for rating credits and for estimating economic capital.

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<sup>10</sup> See especially SR-99-15, "Risk-Focused Supervision of Large Complex Banking Organizations," June 23, 1999; and SR 99-18, "Assessing Capital Adequacy in Relation to Risk at Large Banking Organizations and Others with Complex Risk Profiles," July 1, 1999.

- b) Supervisors should review these internal procedures annually and should "grade" the LCBOs on these procedures.

In a world in which risk measurement has become quite complex, and where appropriate economic capital -- both theoretically and empirically -- differs across LCBOs, only bank-by-bank supervision holds the promise of assuring that LCBOs are adhering to a minimum soundness standard.

We appreciate this opportunity to express our views and we would welcome any questions regarding the advance-practice methodologies of our members. We hope to provide the U.S. agencies and the Basel Committee with additional survey materials as they become available.

## Appendix 1

### Discussion of Benefits of Internal versus External Ratings Systems

[Note that this discussion, reproduced from our March 31 Response, pertains primarily to ordinary commercial credits in the context of the Basel Consultative Paper, not in the context of securitization.]

The RMA Group has several significant concerns over the use of external ratings to set capital requirements in the fashion expressed within Table 1 (of original RMA Response to Basel dated March 31, 2000).

- a) Only a relatively small portion of an institution's balance sheet contains assets that have external ratings. Thus, the attempt to make the Accord more "risk-sensitive" would leave large portions of the commercial loan portfolio subject to the current Accord's one-size-fits-all nature. Even if the Paper's proposal were altered to include non-rated assets on which the obligor issues *some* liability (not that held by the bank) that is rated, the problem would not be significantly assuaged. That is, a substantial portion of the commercial loan portfolio of banks consists of obligors that issue no publicly-rated securities.
- b) A significant portion of an AP ("advanced-practice") bank's portfolio consists of obligors that issue no publicly rated paper, yet whose risk is equivalent to AAA or AA debt. Under the proposed standardized approach, banks would be penalized by lending to such high quality, but not publicly rated, customers.
- c) The external rating process itself presents significant difficulties, many of which would be attenuated by using *internal* instead of external ratings (or more precisely, internally-generated estimates of default probability and loss-given-default).
- In order to increase objectivity, many AP banks have begun incorporating into their internal rating procedures formal credit scoring or equity-based processes to estimate expected default frequencies. Similarly, some banks have begun basing loss-given-default ("LGD") estimates on internal and external historical LGD databases. We do not wish to characterize these attempts at risk parameter estimation (and parameter validation) as being fully "mature," but we do believe that a significant level of rigor applies (especially in the validation of default-probability estimates).

- The public rating agencies, as a generality, do not know the terms of the loan *facility*. Therefore, although the agencies may rate the *obligor*, they generally cannot rate the facility. An exception is the universe of traded, rated commercial loans that are tracked by one or more of the agencies.
  - The significant differences in process, and in underlying databases, across the public rating agencies, especially between countries, presents a problem of *acceptability* (which is recognized within the Consultative Paper). It is much easier and more germane, we believe, for each country's banking supervisors to assess the quality of banks' *internal* ratings procedures than to assess the quality of each country's public rating agencies (due in part to the matter of access to what is essentially a non-regulated rating industry).
  - The issue of comparability across external ratings is also raised in the Paper. The RMA Group's view is that the best basis on which to gauge comparability is in terms of the rating's equivalent estimated expected default frequency ("EDF")<sup>11</sup>, otherwise known as probability of default ("PD"). But why use the rating as a *proxy* for EDF when AP institutions have in place a process for estimating the EDF of an asset in specific, *numerical* terms?
- d) Any rating-based system, whether based on external or internal ratings, is one-dimensional -- the rating determines the capital allocation. Best-practice research, however, indicates that the determination of appropriate economic capital rests on a number of very important risk indicators; i.e., the determination of economic capital is *multi-dimensional*. We argue in Section III below (in RMA Response dated March 31<sup>st</sup>) that, at a minimum, the determination of capital should be two-dimensional -- based on estimates of an asset's EDF as well as its LGD. Still other dimensions of risk measurement are important but reasonably might be added at a later iteration of a new Accord. Of course, some ratings agencies state that their ratings can be thought of as an expression of a range of expected loss rates ("EL"), which is the result of multiplying EDF by LGD. However, the RMA Group believes that EL should be deconstructed into its components in order to avoid lumping assets with dissimilar

risk characteristics into the same capital slot. [See discussion in Section III (of March 31<sup>st</sup> Response).]

- e) We see no reason to treat the obligations of sovereigns differently from that of banks which, in turn, are treated differently from that of non-bank corporates -- except insofar as the type of obligor affects internal estimates of risk characteristics (such as EDF or LGD). Once such risk characteristics are ascertained, these risk factors should drive capital allocations, not whether the obligor is a sovereign, bank, or corporate entity. At best, such differences lead to inappropriate allocation of scarce credit resources; at worst, they give rise to additional incentives for RCA.
- f) In addition to the difficulties expressed above, the "standardized" proposal suffers from two additional and, in our view, fatal shortcomings:
- There are still too few capital buckets to reduce the need for regulatory capital arbitrage. That is, the capital buckets lack granularity. The original Accord calls for only 4 capital buckets or risk weights -- 0%, 20% (total RBC of 1.6%), 50% (total RBC of 4.0%), and 100% (total RBC of 8.0%). The standardized proposal simply adds one more capital-bucket (a risk-weight of 150%) and then reassigns some assets from their original bucket to a new bucket. For example, AA/AAA rated corporates are reassigned from the 100% risk-weight bucket to the 20% risk-weight bucket.

Contrast these (now 5) risk-buckets with the very fine gradations of economic capital made within the best-practice procedures of many global banks. It is not unusual, for example, for a commercial loan to be assigned economic capital of 10 or 20 *basis points* (i.e., less than a 5 percent regulatory risk-weight, in terms of Tier 1 capital, and less than a 2.5 percent risk-weight in terms of Total risk-based capital). Nor is it unusual for a best-practice bank to assign more than 20 or 30 *percentage points* for economic capital for assets with very high estimated EDFs and high estimated LGDs. [See the survey results in Section III (of the RMA Response, March 31<sup>st</sup>).] Moreover, as our survey results show, AP banks typically assign economic capital over more or less a continuum, not in the large *jumps* associated with the current Accord or the proposed standardized revision. Thus, within the proposed standardized version of the Accord

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<sup>11</sup> In this paper, "EDF" refers to an expected default frequency estimated using any number of different

there are substantial "gaps" that constitute continued incentive to engage in regulatory capital arbitrage.

The capital requirements of the proposed new standardized version remain subjective. That is, the cells in Table 1 (of the RMA March 31<sup>st</sup> Response) (with the exception of the added new 150% risk-weight column) relate solely to the existing, arbitrary 0%, 1.6%, 4.0%, 8.0% (total RBC) regulatory requirements. As shown in Section III (of the March 31<sup>st</sup> Response) below, most best-practice institutions would assign positive economic capital to a loan to a sovereign but would assign much less than 1.6 percent economic capital to a AAA/AA loan to a non-bank corporation. Conversely, for some assets in the all-in-one-category of "below B-", most banks would assign more than 12% economic capital. The proposed capital allocations in Table 1 (of the RMA March 31<sup>st</sup> Response), therefore, represent little improvement over the current Accord.

Appendix 2:  
Details of the (Original) RMA Capital Survey

Table 1 below (corresponding to Table 4 of the March 31<sup>st</sup> RMA Response) shows the mean, median, and quartile breakpoints for capital allocations of the 11 members responding to the survey. The table shows economic capital for *credit risk* only; each of the respondents allocates capital for operational risk as well. The time horizon for the table is one year and each respondent calculated capital for credit risk by covering 99.5 percent of the estimated cumulative credit loss distribution (see discussion in text). Within each EDF/LGD cell the bank calculated economic capital for a hypothetical commercial loan under two critical assumptions:

- The asset is a *commercial loan* in bullet form with a one-year term.<sup>12</sup>
- The asset resides within a commercial loan portfolio that reflects the current portfolio's makeup in terms of the size, country, industrial sector, and internal ratings distribution of loans.

For all respondents, the actual internal economic capital allocation (for credit risk) for the hypothetical asset would be equal to or higher than the number shown in the table, either because the bank internally uses a higher coverage target than 99.5 percent or because the bank uses a longer time horizon, or both. In cases where the internal method uses a higher confidence interval than 99.5 percent, the economic capital modeling process typically permitted the bank to use the lower confidence level (or, in some cases, a lower multiple of the estimated portfolio loss standard deviation).

Across the 11 respondents the actual internal economic capital estimation process differed widely. Some banks used a single equation "default mode" model, some used commercially vended or internally-developed "mark to market" models based on the loan's internal rating (and for which credit losses could be incurred short of default, as when a loan is downgraded), and some used KMV's Portfolio Manager (which requires

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<sup>12</sup> For the banks in the sample, the EDF/LGD bucketing process is essentially the same for commercial loans and commercial real estate loans, with correspondingly similar or identical economic capital allocations. For purposes of the Tables, all 11 banks computed economic capital for a hypothetical loan for which there was no country risk (i.e., a loan in their home country).

EDF™ estimates specific to each "name" in the portfolio, as well as pairwise default correlations for each pair of names in the portfolio).

In most cases, the banks bucketed an asset into an LGD range according to facility characteristics such as the degree and type of collateralization, the degree of subordination, etc. Most banks used 5-8 LGD ranges for internal purposes, although one bank used only a single expected LGD assumption (and accordingly calculated the same economic capital allocation for any asset within a particular EDF row in the table). While the definition of "default" differed somewhat across the banks, in all cases the definition was used consistently both when estimating EDFs and within the economic capital estimation process. Nevertheless, within an IRB system for Basel, it might be appropriate to apply a standardized definition of default. Each of the respondent banks would be able to express their estimated EDFs and LGDs in terms of some appropriately specified standard default definition.

Other than a specification of the EDF/LGD cells, and a requirement that each respondent provide economic capital for a one-year bullet loan over a one-year horizon, the RMA survey allowed the participating banks to specify each of the other parameters that go into their economic capital models. Thus, some banks assumed a constant LGD volatility across all assets while others assigned varying LGD volatilities depending on characteristics of the facilities. In some cases, the LGD volatility was assumed to be zero. The assumptions regarding LGD volatility play an especially important role in determining the capital allocations, if any, for Defaulted loans -- the last row in the table. Two of the 11 banks assigned zero capital for defaulted loans either because of the zero LGD volatility assumption or because of an internal policy in which defaulted loans are written down in such conservative fashion that no economic capital is thought to be needed against the remaining value. The other banks explicitly assume some LGD volatility and thus explicitly allocate capital against the loan value, post-write-down. In some cases, the economic capital assigned to the remaining value rises as LGD rises, then declines as the expected LGD category rises to very high levels. This treatment is based on the argument that for very high expected LGDs (where most of the loan is written off) there is correspondingly less need to hold capital against the remaining value.

The LGD volatility factor represents one reason why the Group's members believe that Expected Loss should be broken into its component parts -- EDF and LGD -- for purposes of setting up a risk-characteristic-based capital standard. That is, for expected LGD ranges most in use at the banks (0-10% up to about 50-60%), the higher the expected LGD the higher the assumed LGD volatility. Thus, two loans having the same EL could have very different economic capital allocations (the loan with the higher LGD having the higher capital allocation). This relationship tends to hold throughout the middle EDF ranges (i.e., except for the very lowest and highest EDF ranges) and for LGD ranges up to about the 50-60% range. But as the LGD range gets very large (above about 50-60%) some of the respondent banks assume that LGD volatility falls again. In this case, when two assets have the same EL, the asset with the higher LGD gets the lower capital allocation (because LGD volatility is lower).<sup>13</sup>

In order to arrive at their respective economic capital allocations in the survey, the banks assumed that the reference loan was part of their existing portfolio. Thus, the respondents used diverse assumptions regarding loss correlation coefficients. In some cases, depending on the particulars of the bank's economic capital model, the correlation coefficients were assumed everywhere equal. In other cases, the correlation coefficients were taken to be "typical" of the EDF/LGD cell for which economic capital was being estimated.

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<sup>13</sup> It is also the case that in some single equation capital allocation models, for any fixed LGD volatility, the mathematics of the equation (within relevant parameter ranges) serves to reduce allocated capital (for a given EL) as EDF falls and LGD rises.

Table 1  
[Original Survey, 11 banks, Economic Capital for 1-year Bullet Loan]  
LGD Cells

| EDF Range | 0-10% | 10-20% | 20-30% | 30-40% | 40-50% | 50-60% | 60-70% | 70-80% | 80-90% | 90-100% |          |
|-----------|-------|--------|--------|--------|--------|--------|--------|--------|--------|---------|----------|
| 0-0.04%   | 0.097 | 0.154  | 0.217  | 0.270  | 0.334  | 0.392  | 0.458  | 0.524  | 0.586  | 0.648   | Mean     |
|           | 0.050 | 0.150  | 0.170  | 0.200  | 0.230  | 0.270  | 0.310  | 0.350  | 0.400  | 0.430   | Median   |
|           | 0.020 | 0.050  | 0.086  | 0.111  | 0.121  | 0.131  | 0.141  | 0.151  | 0.177  | 0.197   | 25th%ile |
|           | 0.140 | 0.215  | 0.320  | 0.430  | 0.530  | 0.635  | 0.740  | 0.845  | 0.950  | 1.050   | 75th%ile |
| 0.04-0.08 | 0.199 | 0.306  | 0.408  | 0.516  | 0.627  | 0.734  | 0.844  | 0.964  | 1.074  | 1.184   | Mean     |
|           | 0.080 | 0.250  | 0.340  | 0.420  | 0.530  | 0.650  | 0.700  | 0.820  | 0.920  | 1.040   | Median   |
|           | 0.045 | 0.125  | 0.205  | 0.281  | 0.367  | 0.438  | 0.510  | 0.536  | 0.562  | 0.588   | 25th%ile |
|           | 0.235 | 0.450  | 0.660  | 0.750  | 0.865  | 1.035  | 1.200  | 1.370  | 1.535  | 1.705   | 75th%ile |
| 0.08-0.16 | 0.321 | 0.491  | 0.656  | 0.835  | 1.012  | 1.203  | 1.377  | 1.557  | 1.748  | 1.932   | Mean     |
|           | 0.170 | 0.390  | 0.650  | 0.910  | 1.170  | 1.200  | 1.220  | 1.400  | 1.590  | 1.770   | Median   |
|           | 0.085 | 0.220  | 0.356  | 0.462  | 0.574  | 0.685  | 0.796  | 0.913  | 0.994  | 1.040   | 25th%ile |
|           | 0.335 | 0.620  | 0.925  | 1.180  | 1.450  | 1.725  | 1.945  | 2.165  | 2.435  | 2.705   | 75th%ile |
| 0.16-0.32 | 0.446 | 0.694  | 0.950  | 1.213  | 1.479  | 1.745  | 2.009  | 2.285  | 2.549  | 2.824   | Mean     |
|           | 0.230 | 0.590  | 0.990  | 1.380  | 1.500  | 1.770  | 2.090  | 2.400  | 2.710  | 3.020   | Median   |
|           | 0.150 | 0.385  | 0.543  | 0.704  | 0.875  | 1.046  | 1.222  | 1.358  | 1.439  | 1.520   | 25th%ile |
|           | 0.465 | 0.850  | 1.285  | 1.635  | 2.045  | 2.415  | 2.735  | 3.105  | 3.425  | 3.825   | 75th%ile |
| 0.32-0.64 | 0.634 | 1.010  | 1.390  | 1.771  | 2.171  | 2.562  | 2.962  | 3.362  | 3.768  | 4.168   | Mean     |
|           | 0.370 | 0.920  | 1.450  | 1.970  | 2.460  | 3.000  | 3.550  | 4.090  | 4.640  | 5.180   | Median   |
|           | 0.225 | 0.600  | 0.820  | 1.065  | 1.321  | 1.585  | 1.854  | 2.068  | 2.347  | 2.621   | 25th%ile |
|           | 0.655 | 1.185  | 1.800  | 2.315  | 2.895  | 3.395  | 3.885  | 4.375  | 4.865  | 5.350   | 75th%ile |



The EDF ranges for Table 1 were chosen not only for convenience (a doubling of the EDF range from grade to grade) but also because such EDF distinctions result in significant economic capital differences between "grades." For example, look at the 40-50% LGD range in Table 1. Note that median economic capital starts out at 0.23% in the lowest EDF range, then rises steadily to 20.79% in the worst non-default grade (EDFs greater than 10 percent). The EDF ranges chosen for Table 1, and those in use internally at the respondent banks, tend to have much finer distinctions of risk than some of the letter grades of the major rating agencies. This is one reason why we recommend that *numerical* EDF ranges, rather than rating-agency-equivalent letter grades, be used by the regulators. Nevertheless, to provide a frame of reference, Table 2 below (corresponding to Table 5 in the March 31<sup>st</sup> Response) shows the correspondence between our proposed EDF ranges and Moody's letter ranges (based on Moody's historical corporate bond default studies).<sup>14</sup>

Table 2

| Moody's Letter Grades | Historical default freq. | RMA Group EDF ranges   |
|-----------------------|--------------------------|------------------------|
| Aaa-Baa1              | 0.00% <sup>a</sup>       | 0 - 0.04%              |
| Baa2                  | 0.07%                    | 0.04 - 0.08%           |
| Baa3                  | 0.31%                    | 0.08-0.16%; 0.16-0.32% |
| Ba1 - Ba2             | 0.52 - 0.62%             | 0.32 - 0.64%           |
| Ba3                   | 2.53%                    | 0.64-1.28%; 1.28-2.56% |
| B1                    | 3.46%                    | 2.56 - 5.12%           |
| B2                    | 6.88%                    | 5.12 - 10.00%          |
| B3                    | 12.23%                   | 10.00% +               |
| Caa1 - C              | 19.09%                   | 10.00% +               |

<sup>a</sup> Only ratings of Aa3 and Baa1 have positive default frequencies at the one-year horizon - Aa3 at 0.07% and Baa1 at 0.04%.

<sup>14</sup> See Exhibit 31, Moody's 1999 bond default study, for one-year horizons.

From this table one sees that, although Moody's has 8 letter grades from Aaa-Baa1, their grades do not provide for much distinction in terms of actual default probabilities. By contrast, the RMA example provides for two EDF ranges (0.08-0.16% and 0.16-0.32%) covering the equivalent of Moody's lowest investment grade category (Baa3). Similarly, the RMA suggested EDF ranges provide for two more EDF categories (0.64-1.28% and 1.28-2.56%) covering the equivalent of Moody's Ba3 category. Only at the very lowest EDF levels -- assets in the equivalent of Moody's B3 and C categories -- does the RMA suggested matrix provide less detail (because such assets would comprise a very small fraction of a typical, sound bank's portfolio).

## Appendix 3

## Participants in the RMA Securitization Capital Working Group

Institutions providing economic capital data for the EDF/LGD matrix.

|                      |                              |
|----------------------|------------------------------|
| Bank of America      | Bank of Montreal             |
| Bank One             | Citigroup                    |
| First Union          | FleetBoston Financial        |
| KeyCorp              | PNC Financial Services Group |
| Royal Bank of Canada | Union Bank of California     |
| Wells Fargo          |                              |

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