Comment on Notice of Proposed Rulemaking:

Risk-Based Capital Guidelines: Market Risk; Alternatives to Credit Ratings for Debt and Securitization Positions

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Risk-Based Capital Guidelines: Market Risk

Comment on Amendment to the Notice of Proposed Rulemaking

INTRODUCTION

On December 21, 2011, the OCC, Federal Reserve, and the FDIC issued a Notice of Proposed Rulemaking (NPR) proffering new risk measurements to replace NRSRO credit ratings for purposes calculating capital charges for debt instruments. The replacement of capital charge methodologies which are ratings driven and dependent was mandated by law; the effort however provides an opportunity to improve methods and overcome the problems associated with a purely ratings based approach. Ideally, the new capital charge procedures will better align capital charges with exposure risk while promoting greater responsibility for the regulated investor in assessing and evaluating the risks of acquired assets.

The comments and suggestions in this note are limited to the application of the proposed NPR framework to securitized products. It makes observations about the strengths and shortcomings of the guidance and suggests an alternate methodology to the NPR formula. The alternative is designed to more fully capture i) risk differences stemming from dissimilarities in collateral, even among pools within narrowly defined sectors, and ii) structural features other than attachment/detachment levels that could also have material impact on the economic risk of securitizations.

THE PROPOSED SIMPLIFIED SUPERVISORY FORMULA APPROACH (SSFA)

The NPR proposes a two-step capital charge procedure for securitized debt instruments. The first step involves assessing a capital charge for a position by reference to a formula. In the second step, the formulaic charge is compared to various threshold minimum charges and the greater value is applied.

The SSFA formula is presented as follows:

$K_{SSFA} = (e^{a*u} – e^{a*l})/[a*(u-l)]$

Where:

e = the natural exponent

$a= -1/(p*K_g)$

$u = D - K_g$

$l = A - K_g$

K_g = capital charge associated with straight bank exposure to the collateral assets.

A = security attachment point (amount of subordination supporting the structured security).

D = security detachment point (point at which losses on the structured security reach 100%).

p = adjustment factor that is 0.5 if the security is not a resecuritization, and 1.5 if it is a resecuritization.

However, this formula is overridden by Supervisory Minimum Specific Risk Weighting Factor Floors:

Cumulative Principal Losses as a % of K_g	Specific Risk Weighting Factor
0 < Losses < 50	1.6%
50 <Losses<100	8.0%
100<Losses<150	52%
Losses>150	100%

Other minimum charges include a 100% specific risk weighting factor for positions "that absorb losses up to the amount of capital that would be required for the underlying exposures under the agencies' general risk-based capital rules had those exposures been held directly by the bank." In addition, a 100% specific risk weighting factor is applied to the "junior-most portion of the transaction".

PROPERTIES OF THE K_{SSFA} FORMULA

The K_{SSFA} formula may be rewritten as:

$$K_{SSFA} = [(p*K_g)/(D-A)]*[\ e^{a*l} - e^{a*u}]$$

In this form, the formula may be seen as a weighted difference of two decay functions. The first decay function is driven by K_g, p, and A; the second is by K_g, p, and D. It is understood that the role of K_g is as a proxy for a projection of cumulative collateral pool losses. As A increases relative to K_g while keeping (D-A) constant, the difference in the decay functions diminishes, lowering the capital charge. The key driver for the diminution is the fact that the first exponential term is made smaller in value. Ironically, an increase in detachment, D, (K_g, p, and A constant) makes the difference in the decay rates larger. The effect however, is usually small and is overwhelmed by the impact of a larger D in the weight expression.

The SSFA capital charge has general properties one would expect: i) increases with the diminution of support (as measured by A) relative to potential pool loss (as indicated by K_g), ii) decreases with an increase in tranche thickness (D-A), and iii) increases with an increase in p. There are, however, a number of anomalies. First, the calculation can generate capital charges in excess of 100% when the attachment is below K_g; the situation could be relevant to certain subordinated tranches. Second, K_{SSFA} is not structured for situations in which the attachment exceeds the detachment (it is undefined for A=D and generates counterintuitive results for A>D). Given the variable definitions, that would not occur. However, it means that the measure is ill-suited for structures that use support mechanisms other than subordination (overcollateralization or reserve accounts, for instance). The benefit of such support structures could not necessarily be added to A while maintaining the integrity of the calculation.

Finally, the calculation generates very low charges for positions having a large amount of subordination relative to K_g or for positions that are thick (i.e. D-A is large). Consider:

Kg=	A=	D=	p=	a=	l=	u=	Kssfa=
0.04	0.08	0.1	0.5	-50	0.04	0.06	0.085548
0.04	0.08	1	0.5	-50	0.04	0.96	0.002942
0.04	0.15	0.2	0.5	-50	0.11	0.16	0.001501

Given a K_g of 4%, a mezzanine class with an 8% attachment and a 10% detachment is assessed by the formula with a capital charge of 8.55% but if it is a senior note with the same attachment the capital charge is 0.29%. A mezzanine class with a 15% attachment and a 20% detachment would qualify for a charge of only 0.15%.

The anomalies and certain low charge outcomes motivate the imposition of the ad hoc floors. Generally, the floor levels appear somewhat arbitrary, are lumpy, and introduce anomalies of their own. Why, for example, when K_g is 4%, a security could already have lost 2% (i.e. is impaired) and be charged only 1.6%? It is possible that the heading of Table 15 in the NPR is incorrect and the intention is to measure collateral losses against K_g rather than security losses. Contacts with the respective regulators indicate there is some disagreement among the respective regulatory bodies proposing the NPR about what precisely is intended here.

The particulars of the ad hoc floors aside, the concept of a dynamically adjusting charge conditioned on loss experience (either collateral or security) is a good one. That feature is useful since a priori collateral performance volatility expectations are incorporated only through the non-granular K_g, which in any case can be overwhelmed in experience.

Problems with the Proposal

There are a number of problems with the proposal.

1) K_g is used to measure the risk of cumulative collateral losses, but it is a variable with restricted values and does not necessarily correlate with the risk of particularly crafted pools. Consequently, there may be an incentive to loosen underwriting standards and chase spread in some cases; in other cases, securitization may become uneconomical. More granular categories could help, but the problem remains that the best measures of projected cumulative collateral pool loss are crafted to the particular characteristics of the collateral.

2) Subordination is not the only form of credit support in structured finance. The NPR makes clear regulators are aware of this shortcoming. The proposed system, however, makes it difficult to treat overcollateralization or reserve accounts, for instance, in a manner consistent with subordination. The proposal also does not generate any benefit for cash-diversion triggers and the use of spread to pay down debt.

3) The minimum capital charge floors are arbitrary and lumpy, making it uneconomical to hold certain securities having sound collateral and structures with negligible security credit risk while undercharging other conditions. Deal structurers will be incented to cram the maximum risk and spread into pools with preset charges. While recalibrating capital charges to realized losses is an admirable idea, lumpy categories that do not consider the full range of available support may create unintended disincentives for holding high quality assets or perverse incentives for portfolio managers to add risk.

4) The charging methodology described above does not seem to take into account interim write-downs or acquisition discounts.

5) The capital charge formula, while having good general properties, may not have good particular properties with respect to particular charge outcomes and particular risk combinations. This may have the unintended consequence of making certain securitizations either uneconomical or undercharged.

AN ALTERNATIVE FRAMEWORK

An improved approach would to compare collateral losses (first projected, then actual) to security support. The calculation should be able to factor in alternative forms of credit support, such as overcollateralization, reserve accounts, or excess spread. The calculation should also take into account acquisition premia or discounts, and have sufficient flexibility to reflect charges after interim write downs. Finally, the calculation should be sufficiently robust to reflect the potential leverage of a security as well as potential recoveries in the event of default.

For a capital charge K to be applied to the par value of the security, let:

L = Realized cumulative collateral principal losses net of recoveries, expressed as a proportion of original aggregate par of all classes of debt of the issue/series of which the charged security is a part.

E = The a priori projection of total cumulative collateral principal losses net of recoveries, as a proportion of the aggregate original par of all classes of debt issued.

C = Ratio of the Carrying Value of the Security divided by the Par Value of the Security. The carrying value may differ from par because of interim write downs or because the security was acquired at a price other than par.

Q = Aggregate original par of all classes of debt of the issue of which the charged security is a part.

P = Aggregate original par of all Trust collateral.

O = Original overcollateralization proportional to total debt par [(P/Q)-1]

D = Security detachment point.

A = Security attachment point .

M = (D-A)*(1-C)

S = min(security attachment point (A) plus proportional overcollateralization (O) plus proportional reserves (V) plus enhancement benefit from discount acquisition or interim write-down (M), 1).

U= the ratio of current deal debt balance to original deal debt balance.

W= the ratio of current collateral debt balance to original collateral balance.

exp(.) = the natural exponent raised to the power of the expression inside the parentheses.

max(.) = the maximum value of the alternate expressions inside the parentheses.

min(.) = the minimum value of the alternate expressions inside the parentheses.

The variables E, C, D, A, and S, are non-negative real numbers less than or equal to 1 and D>A.

The capital charge to be applied to the par of the security position would be calculated as:

$$K = C * [\exp(\max(\min(L,S)/S,\ E/S)-1)^{(5-4(\max((L-E),0))}] * \exp((\min((\max(E,L)/D),1)-1) * \exp(\min(U/W,1)-1)$$

An alternative view of the method is to say that product of the natural exponent terms is a proportional charge to be applied to the carrying value of the charged position.

The point of the first exponential expression is to assign a charge against the likelihood of default loss. The point of the second exponential expression is to capture the impact of potential recoveries. The point of the third exponential expression is to capture the benefit of principal pay-downs relative to reductions in the par value of collateral. As the likelihood of default loss rises and the likelihood of recovery becomes falls, the capital charge K, when multiplied by the par value of the security generates an amount tending to the current carrying value. The power term in the first exponential expression helps to define the range of the calculation, from near zero percent to 100 percent, and taxes collateral underperformance relative to expectations.

An a priori cumulative loss projection may be calculated using past historical performances of pools. This may involve something as simple as reviewing the distribution of historical performance or, alternatively, applying sophisticated loan-level collateral models estimated with historical data but capable of projecting a range of outcomes for different underwriting characteristics and future variable assumptions. The projection applied should cover not only expected losses but some component of unexpected loss (i.e. beyond the mean).

Because updated loss information is entered into the capital charge calculation when the a priori projection is exceeded, initial unexpected loss coverage would not need to be large. While a bank might see an advantage to underreporting a collateral loss projection, the error would be self-defeating when losses overwhelmed the initial estimate and capital charges rose abruptly. The measure proposed above taxes underperformance relative to a priori projections. In any case, the assumption methods can be tested for reasonableness during any audit or third party financial review.

There is a concern among regulators that small banks will be ill-equipped to make informed judgments about likely collateral performance. That is a motivation for the use of K_g as a proxy. The NPR suggests "if the bank does not know K_g for a position because it lacks the necessary information on the underlying exposures, the bank may not use the SSFA to determine its specific risk-weighting factor. Rather, the bank must apply a specific risk weighting factor of 100 percent." The same should be said of a priori collateral pool cumulative loss projections. If the bank has no reasoned foundation for a projection of cumulative collateral pool performance, it should not be investing in the structured security.

Overcollateralization should be added within the variable S only to the extent that the security being charged may benefit from the overcollateralization.

A priori collateral pool loss projections aside, values for the other variables are readily obtained. A, D, P, Q, and O should be available from indentures, and U, W, V, and L will likely be found in trustee reports. The variable C is under the control of the institution holding the asset. Third-party vendors popular among institutions investing in structured securities may also be helpful. Typically, values for the variables above (excepting E and C) are readily available.

Essentially, the product of the exponential terms in the capital charge measure follows the curve of the natural exponent running from near zero to one. The terms collectively may be thought of as expressing a probability of loss. The whole system is structured to charge an amount equal to the carrying value of the position when a complete loss to that position becomes extremely likely, to charge a very small amount when position losses are highly unlikely and to charge ever increasing amounts as actual collateral pool losses consume support in excess of a priori projections. Because charges move incrementally with monthly collateral reports, a charge may increase at regular periodic intervals in connection with deteriorating performance without imposing a single and sudden capital shock to the bank. At the same time, persistent underperformance will have a cumulative effect on charges whether or not the bank writes down the exposure.

Accounting for the benefit of excess spread is a challenge. Trustees typically report collateral losses net of recoveries, but not net of applied excess spread. The actual application of excess interest to support a structure (rather than leaking out in the form of interest or payments to equity) comes when it is applied to amortize debt principal; potentially picked up in the final exponential term.

The proposed formula is not designed to be applied to IOs or resecuritizations. IOs strip excess interest from a collateral pool and typically benefit from a senior position in the priority of payments for interest cash-streams, but such features are not necessarily well described by overcollateralization and security attachment.

Resecuritizations involve very complicated relationships between the underlying obligors and performance of the security being charged. Moreover, there may be a high degree of performance correlation among securities that support the security being charged. If the risk characteristics of the collateral backing a resecuritization debt are homogeneous, and tranches are thin, the performance of resecuritization debt may be binary (either the resecuritization debt pays par or suffers total loss). Unless performance probabilities of the collateral are very strong (e.g. a resecuritization of performing senior debt securities), capital charges for such securities are very difficult to create because the charged security performance can be volatile and outcome probabilities are so unstable. Generalized rules that do not take consider specifics of the resecuritzed collateral, the particularities of structure, and the complexities of embedded leverage, are an invitation to arbitrage and likely undercapitalization of risks.

The formula above may be applied to the banking book as well as the trading book. In the case of the banking book, the capital charge is calculated using C, the carrying value of the security. In the case of the trading book, the carrying value might be replaced by the market value. If the market value is less than par, the procedures in the formula for imputing implied support may be followed so that the security is not charged twice.