

**Response to the January 2004 Changes to the Basel Securitization Framework****Introduction**

The RMA Capital Working Group<sup>1</sup> congratulates Basel on some of the significant changes the Committee has made to the securitization framework in its January 30, 2004 release. In particular, the Group welcomes

- the introduction of an Internal Assessment Approach (IAA) for certain un-rated exposures to ABCP conduits;
- the changes in the Ratings-Based Approach (RBA) risk weights, including a more granular rating scale and applicability of the lowest risk weights to senior tranches;
- the “external ratings override” that would permit originators to apply the RBA risk-weights to rated positions that fall below  $K_{IRB}$ .

However, the Group believes that the original Supervisory Formula Approach (SFA) is preferable to the newly proposed Simplified Supervisory Formula (SSF). In this regard, we strongly support the recent response of the International Swaps and Derivatives Association (ISDA)<sup>2</sup>, several of whose members are also members of the RMA Capital Working Group. Not only would the SFA provide for more-conceptually-justified risk weights, the degree of “complexity” of the formula has been greatly overstated – indeed the original SFA can be implemented easily within Microsoft Excel™. Most importantly, we believe the SFA should be implemented in its most basic form rather than requiring the deduction from capital of positions less than  $K_{IRB}$ , or the smoothing of the “cliff effect” resulting from the deduction requirement. Indeed, basing the SFA on the underlying “uncertainty-in-loss-prioritization” model discussed below, without any artificial appendages to the model, would help to minimize the inevitable differences between the capital allocations resulting from the RBA and the SFA. Finally, we would like to repeat the concern expressed in our earlier papers regarding the application of an arbitrary floor to capital of 56 basis points on senior-most tranches. Again, the best practice is to apply the underlying credit risk model to the securitization without any artificial constraints or appendages.

---

<sup>1</sup> The Capital Working Group of RMA — The Risk Management Association -- consists of senior risk management officers at large banking organizations responsible for the measurement of risk and the determination of Economic Capital. The names of the institutions represented on the Capital Working Group, along with staff members contributing to the preparation of this paper, are shown in an Appendix. Individual banking organizations that are members of the Group may be responding separately to the January 30, 2004 Basel release, and may hold opinions regarding Basel II and the U.S. ANPR that differ from those expressed in this response.

<sup>2</sup> Response to FSA from ISDA, dated February 16, 2004.

## Comparative analysis of SFA and SSF

The SFA is founded on a simple, but rigorous “uncertainty-in-loss-prioritization” (ULP) model by Gordy and Jones.<sup>3</sup> This model is based on the same asymptotic single risk factor (ASRF) foundation as the rest of the Basel IRB approach. The SFA capital charge is defined via a closed-form function (in CP3) that can be easily implemented in Excel™. This function combines (a) the capital charge function (also defined in CP3) that comes from the Gordy-Jones ULP model, (b) a supervisory override of dollar-for-dollar capital up to  $K_{IRB}$ , and (c) a smoothing of the “cliff effect” that otherwise would exist when moving from the dollar-for-dollar charge to the actual ULP capital beyond  $K_{IRB}$ . In contrast, the conceptual foundation for the newly proposed SSF is unknown.

The main motivation of the proposed SSF is the opinion expressed by some industry participants that the SFA is too complex. However, a major portion of this complexity comes from the deduction requirement for tranches below  $K_{IRB}$ , mentioned above. The deduction requirement leads to punitive capital charges for thin mezzanine tranches in the vicinity of  $K_{IRB}$ , as we show in the examples below. We believe that the deduction requirement should be removed from the SFA. Not only would this simplify the SFA, it would allow the ULP model to generate capital allocations for each tranche that, when summed, equal capital for the underlying pool of credits (except, of course, for the Basel capital floor of 56 basis points).

Finally, the proposed simplified formula represents the integral over a number of discrete segments into which the tranche is arbitrarily divided – the number of segments being represented by the parameter “ $T$ ”. The accuracy of the formula’s calculation rises as “ $T$ ” approaches infinity. Thus, the actual capital calculation would differ depending on the bank’s (or the supervisor’s) choice of “ $T$ ”. Also, the effect of the choice of “ $T$ ” on calculated capital will differ depending on the particular tranche and/or the particular pool being analyzed.

### Examples

We consider two examples of the underlying pool that differ only by the number of loans  $N$  in the pool:  $N = 40,000$  (typical for consumer securitizations) and  $N = 40$  (typical for CDOs). Both pools are homogeneous with  $PD = 0.5\%$ ,  $LGD = 40\%$  and maturity of one year.  $K_{IRB}$  for these pools (including expected loss) is 3.91%.

The graphical plots below show marginal capital<sup>4</sup> for these pools according to the ULP model (blue solid curve), SFA (green dash-dotted curve) and SSF (red dash-double-dotted curve). We used  $\tau = 75$  in the ULP and SFA expressions since the Basel

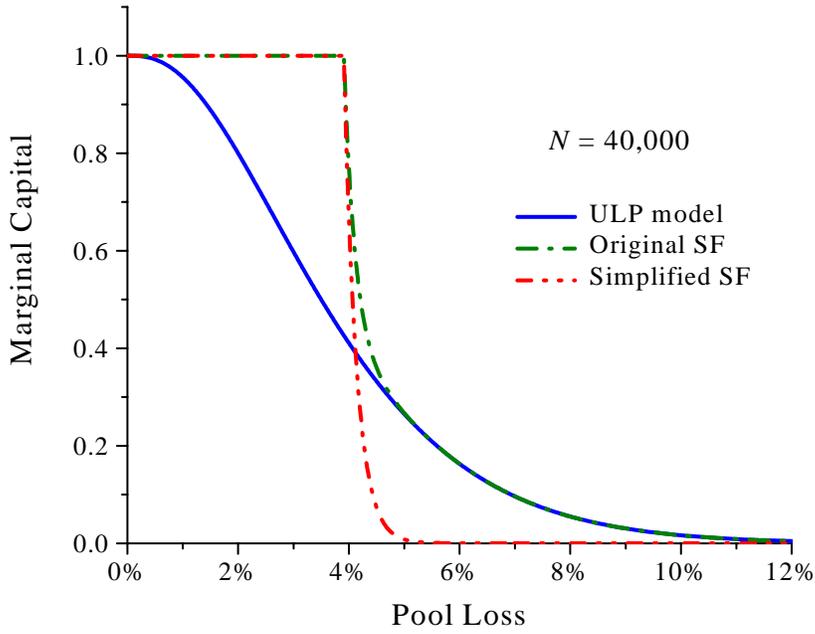
---

<sup>3</sup> See Gordy, Michael and David Jones, Risk, March 2003, pp. 78-93.

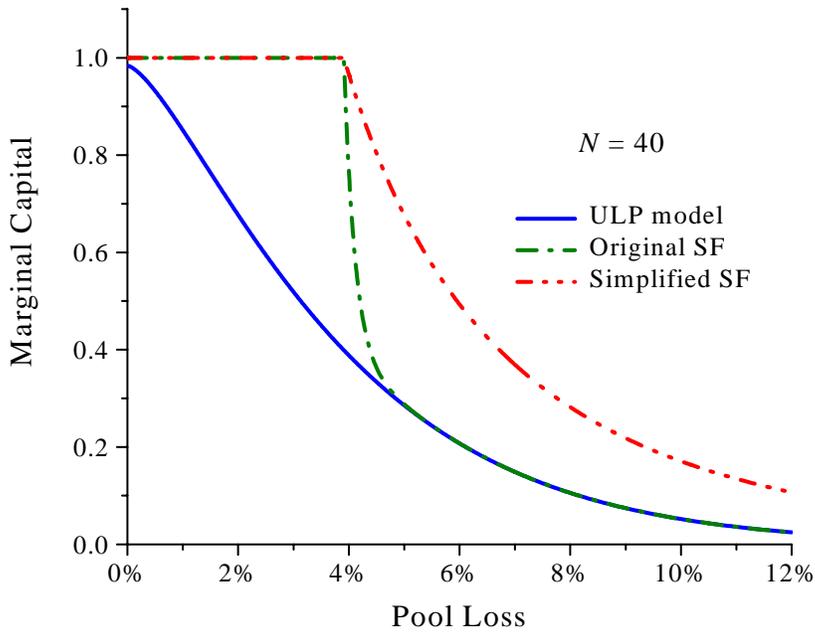
<sup>4</sup> By marginal capital we mean capital allocated to an infinitesimally thin tranche (ITT) per unit of notional. Capital for a finite tranche equals the area under the marginal capital curve between  $L$  and  $L+T$ .

Committee has indicated its intention to reduce parameter tau from 1000 (as in CP3) to 75.

**Graph 1**



**Graph 2**



It is clear from these plots that the SSF grossly understates the risk (capital) for  $N = 40,000$  and grossly overstates it for  $N = 40$ , compared with the conceptually sound

estimate of capital (the capital generated by the pure version of the ULP model as shown by the blue curve).

We now consider a securitization structure defined on these two pools. The first loss piece covers losses up to  $K_{IRB}$ . Above  $K_{IRB}$  there are three mezzanine tranches: M1 and M2 with thicknesses of 1% each and, above them, M3 with thickness of 2%. Thus, the protection level of the senior tranche is  $K_{IRB} + 4\% = 7.91\%$ . The two columns “L” and “T” show the lower bound and thickness of each tranche, expressed as a percentage of pool notional amount. The two tables below show capital charges for these tranches according to the ULP model, the SFA, and the SSF (the latter two are subject to Basel’s floor of 0.56% for the capital charge).

**Table 1** $N = 40,000$ 

Tranche	L	T	Capital Charge as Fraction of Tranche Notional Amt.				
			ULP	SFA	SSF, I=1	SSF, I=10	SSF, I= $\infty$
<b>First Loss</b>	0%	3.91%	77.65%	100.00%	100.00%	100.00%	100.00%
<b>Mezz. 1</b>	3.91%	1.00%	34.77%	45.91%	50.50%	25.22%	22.61%
<b>Mezz. 2</b>	4.91%	1.00%	22.02%	22.09%	0.61%	0.56%	0.56%
<b>Mezz. 3</b>	5.91%	2.00%	10.55%	10.55%	0.56%	0.56%	0.56%
<b>Senior</b>	7.91%	92.09%	0.10%	0.56%	0.56%	0.56%	0.56%
<b>Total / <math>K_{IRB}</math></b>			100.0%	136.0%	126.6%	120.1%	119.4%

**Table 2** $N = 40$ 

Tranche	L	T	Capital Charge as Fraction of Tranche Notional Amt.				
			ULP	SFA	SSF, I=1	SSF, I=10	SSF, I= $\infty$
<b>First Loss</b>	0%	3.91%	69.14%	100.00%	100.00%	100.00%	100.00%
<b>Mezz. 1</b>	3.91%	1.00%	34.43%	46.11%	84.87%	83.73%	83.62%
<b>Mezz. 2</b>	4.91%	1.00%	25.20%	25.27%	60.22%	59.62%	59.56%
<b>Mezz. 3</b>	5.91%	2.00%	15.61%	15.61%	39.78%	38.63%	38.51%
<b>Senior</b>	7.91%	92.09%	0.32%	0.56%	14.43%	3.00%	1.34%
<b>Total / <math>K_{IRB}</math></b>			100.0%	139.4%	497.4%	227.1%	188.0%

These tables clearly show how the choice of parameter “I” in the proposed SSF affects the capital charge. Even in the best case,  $I = \infty$ , capital charges are unacceptably low for  $N = 40,000$  and unacceptably high for  $N = 40$  (again, when compared against the ULP model itself). By comparing the ULP and SFA capital charges for the tranche M1, one can see how the deduction requirement in the original SFA affects thin mezzanine tranches in the vicinity of  $K_{IRB}$ . The last row of the tables shows the total capital for all tranches as a percentage of  $K_{IRB}$ . When  $N$  is small (i.e., 40 as in Table 2), the total capital charges for all tranches are about *twice* the capital charge for the underlying pool (or more). When  $N$  is large (as in Table 1), the total capital charges for all tranches still is significantly above the capital charge for the pool. The ULP capital charges, however, always sum up to  $K_{IRB}$ .

## Other Issues

1) Comparing RBA to SFA. Even when the SFA is rationalized -- by removing the deduction for positions less than  $K_{IRB}$  and eliminating the smoothing of the cliff effect caused by the deduction – there may still be considerable differences between the capital generated by the SFA and the capital allocated by the RBA.<sup>5</sup> To some extent, these differences are unavoidable, for several reasons. First, ratings reflect either a PD or an EL range, which by themselves, are insufficient for computing Economic Capital. Second, bias can be injected into the comparison, because the PDs or ELs underlying a particular rating may be generated by a process that differs from the ASRF model's estimate of the underlying pool loss distribution. For example, in estimating the EL of a tranche, Moody's uses a loss distribution estimation process that differs substantially from the Basel credit risk model.

The “external ratings override”, which we applaud, presents another comparison problem with the SFA. That is, a rated position below  $K_{IRB}$  will attract a less-than-100% capital charge – but CP3 calls for a deduction from capital for positions below  $K_{IRB}$  that employ the SFA. This is still another reason to eliminate the deduction requirement within the SFA.

The deduction requirement for positions below  $K_{IRB}$  leads to a perceived need for a “smoothing” of the resulting cliff effect for positions past  $K_{IRB}$ . This smoothing process, for positions near  $K_{IRB}$ , leads to the SFA always producing a greater capital requirement than implied by the underlying ULP model (see Graphs 1 and 2).

Finally, note that, in some circumstances, the rating on a securitization tranche takes into account the protection provided by FMI. All other things equal, since the SFA does not take into account such protection, the SFA will be more conservative than the RBA.

2) The minimum 56 basis point capital charge. Application of the pure SFA-ULP model can result in extremely small ECs for the very most senior positions (ECs of only a few basis points). It is inconsistent with Basel II's generally risk-sensitive philosophy to place an artificial floor to senior-tranche capital – a floor that may be many times the EC generated by the underlying Basel credit risk model. Note also that the 56 basis point floor penalizes those banks that are truly transferring most of the credit risk. This would be the case when the bank sells the mezzanine pieces and keeps the super-senior piece. Since the super-senior piece generally is the largest (in notional amount), an overstatement of the capital requirement may have a large disincentive effect.

---

<sup>5</sup> For example, see “Feedback on the Use of the Supervisory Formula,” Cynthia McNulty, Emmanuelle Sebtou, and Tom Wilde, February 17, 2004, BIS Securitization Group Meeting, New York. The examples presented in this paper represent comparisons between the RBA and the original SFA rather than the “true ULP” version of the SFA we are advocating. Note that, for positions near  $K_{IRB}$ , the original SFA will always overstate capital, due to the inclusion of the “smoothing” of the cliff effect.

## Conclusion

The RMA Capital Working Group strongly recommends reverting to the original SFA due to the shortcomings of the proposed SSF:

- lack of conceptual foundation;
- confusion introduced by the choice of parameter “T”;
- over-conservativeness for pools with relatively small number of exposures

We also strongly recommend removing the deduction requirement for tranches below  $K_{IRB}$ . This requirement is not justifiable from a conceptual perspective, and leads to punitive capital charges for mezzanine tranches in the vicinity of  $K_{IRB}$ . Removal of the deduction requirement will make the SFA simpler and more consistent with the RBA. Once the deduction requirement is removed it is then neither necessary nor desirable to have a “smoothing” of the cliff effect (the cliff will have been removed). Rather, the SFA will revert to the underlying, conceptually sound ULP model.

Finally, we believe the 56 basis point floor should be removed, when applying the SFA to senior-most tranches. We also support, but only in the context of removing the deduction below  $K_{IRB}$  and the 56 basis point floor, reducing the value of the parameter tau in the SFA from 1000 to 75.

## Appendix

### Institutions in the RMA Capital Working Group:

Bank of America	Bank of Montreal
Bank of New York	Bank One
Capital One	Citicorp
Comerica	Discover Financial Services
FleetBoston Financial	Household International (HSBC)
JPMorganChase & Co.	KeyCorp
MBNA	PNC Financial Services Group
Providian Financial	Royal Bank of Canada
Union Bank of California	Wachovia
Washington Mutual Bank	Wells Fargo

### Staff participating in drafting or reviewing this paper:

**Bank of America:** John S. Walter, Senior Vice President, Risk Capital & Portfolio Analysis

**Bank One:** David Nunn, First Vice President, Treasury; David Riner, Senior Vice President, Consumer Risk Management; James Colton, Vice President, Consumer Risk Management.

**Capital One:** Geoffrey Rubin, Director, Economic Capital Group; William Nayda, Manager, Horizontal Financial Management

**FleetBoston Financial:** Ranga Rangarajan, Managing Director-Mgt. Sciences, Corporate Strategy Group; James Papadonis, Executive Credit Officer, Corporate Consumer-Risk Management; Sumit Agarwal, Corporate Consumer-Risk Manager; Thomas Loeffler, Basel II Project Leader; William Schomburg III, Director of Economic Methodologies

**Household International:** Daniel Pantelis, Vice President, Credit Policy; Gary Harman, Director, Credit Policy

**JPMorganChase & Co:** Bradford Pollock, Vice President; Joe Lyons, Vice President; Cynthia McNulty, Vice President; Adam Gilbert, Managing Director

**KeyCorp:** Ashish K. Dev, Executive Vice President, Enterprise-Wide Risk Solutions, Robert Kula, Senior Vice President, Director of Economic Capital; Michael Pykhtin, Vice President, Risk Management

**MBNA:** Kevin Schindler, Senior Executive Vice President; Thomas Dunn, Executive Vice President

**Providian Financial:** Wei Shi, Vice President, Treasury; Scott Schulz, Director, Treasury

**Royal Bank of Canada:** Lyn McGowan, Senior Manager, Basel Accord Implementation; Chitra Muralikrishnan, Senior Manager, Financial Policy and Economic Capital

**Union Bank of California:** Paul C. Ross, Senior Vice President, Portfolio Risk Management; Desta G. Medhin-Huff, Vice President, Portfolio Risk Management

**Wachovia:** Gary Wilhite, Senior Vice President, Risk Management, Portfolio Management Group; James Cypert, Asst. Vice President, Risk Management, Portfolio Management Group

**Washington Mutual Bank:** John Stewart, Vice President, Economic Capital Group; Amy Alexander, Vice President, Enterprise Modeling and Decisioning Systems; Kurt Wisecup, Asst. Vice President, Economic Capital Group

**Wells Fargo:** George Wick, Senior Vice President, Portfolio Strategies; Jouni Korhonen, Senior Vice President, Credit Risk Architecture

**RMA – The Risk Management Association:** Pamela Martin, Director of Regulatory Relations & Communications

**Mingo & Co.:** John Mingo, Managing Director