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CLOs and the Simplified Supervisory Formula Approach (SSFA)

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With the introduction of the Simplified Supervisory Formula Approach (SSFA)[1], regulatory capital charges for CLO tranches could change significantly. For this report, Moody's Analytics calculated the SSFA capital charge on a large sample of CLO tranches of varying seniority. Details on the SSFA calculation itself can be found in the Appendix.

With Dodd-Frank mandating the removal of NRSRO credit ratings from regulations, the SSFA specifies a new method of calculating regulatory capital for banks. We address the SSFA in the context of CLO tranches and will review the effect of the SSFA on other Structured Finance asset classes in future research.

A primary driver of the final capital charge is whether or not the transaction counts as a resecuritization. Under the new rules, any CLO that holds even a single Structured Finance tranche counts as such and will be penalized. In Chart 1, we show the average capital charge by current rating for both resecuritizations and non-resecuritizations.

Chart 1: SSFA Capital Charges for CLOs – Resec vs. Non-resec

Current Rating	Non-resec Sample	Non-resec Cap Charge	Resec Sample	Resec Cap Charge
Aaa	586	2.5%	551	7.8%
Aa	286	2.6%	369	28.0%
A	236	7.1%	247	49.8%
Baa	221	18.0%	229	63.5%
Ba	309	48.6%	399	87.0%
B	109	64.8%	107	96.2%

If a CLO counts as a resecuritization, its capital charge is significantly higher than if it is not classified as such. For Aa-rated tranches, the average capital charge in our sample increases by over ten times. Even B-rated tranche capital charges increase by nearly 50%. This means that (a) banks are disincentivized to hold legacy CLO tranches with any potential Structured holdings and (b) new-issue CLOs are unlikely to include a Structured Finance bucket as long as these regulations apply.

1The latest rules are available at www.fdic.gov.

Because CLO 2.0 transactions have not included Structured Finance buckets and seem unlikely to do so going forward, we will focus on non-resecuritization numbers for the rest of this report. We start by asking how the new SSFA capital charge compares with Basel II. In Chart 2, we combine the current rating buckets with the capital charges determined by the ratings-based Basel II approach and results from the latest Moody's Default and Loss study for Structured Finance securities[2].

Chart 2: SSFA, Basel II, and Historical Losses on Sample CLO Tranches

Current Rating	Sample Size	Non-resec Cap Charge	Basel II Ratings Cap Charge	Moody's Study CLO 5 Year Cumulative Loss	Moody's Study CLO 10 Year Cumulative Loss
Aaa	586	2.5%	0.96%	0.61%	0.71%
Aa	286	2.6%	1.2%	1.4%	1.9%
A	236	7.1%	1.4% - 2.8%	4.2%	4.7%
Baa	221	18.0%	4% - 8%	10.7%	22.5%
Ba	309	48.6%	20% - 52%	26.3%	61.0%
B	109	64.8%	100%	45%	NA

For all tranches in our sample rated above Ba, the average SSFA capital charge is more severe than the Basel II equivalent. For investment-grade tranches, the SSFA capital charge is two or more times higher than the Basel II capital charge. For B-rated tranches, on the other hand, the SSFA allows for a more granular capital charge calculation rather than always using 100%.

Additionally, for any tranche rated A or higher, the SSFA capital charge is up to three times higher than the ten-year historical CLO cumulative loss rates as reported by the Moody's rating agency. The SSFA charge for Baa- and Ba-rated tranches is in line with ten-year cumulative loss numbers.[3]

In Chart 3, we group the tranches by thickness. We also add average tranche thickness to the current rating chart for comparison.

Chart 3: SSFA as a Function of CLO Tranche Thickness

Tranche Thickness	Sample Size	Non-resec Cap Charge
<2%	62	39.0%
2%	507	52.1%
5%	691	16.5%
10%	278	7.1%
20%	113	4.7%
30%	211	2.6%
60%	349	2.3%
90%	2	8.4%
100%	4	32.6%

Current Rating	Sample Size	Non-resec Cap Charge	Tranche Thickness
Aaa	586	2.5%	46.9%
Aa	286	2.6%	20.9%
A	236	7.1%	10.2%
Baa	221	18.0%	7.3%
Ba	309	48.6%	7.2%
B	109	64.8%	6.9%

2 Default & Loss Rates of Structured Finance Securities: 1993 – 2010

3 Note that these are estimated cumulative loss numbers and, further, the rating agency's latest update of these numbers was in 2010 when transactions were generally less healthy. That today's estimated cumulative loss numbers may be lower only increases the relative severity of the SSFA.

As expected, there appears to be a correlation between tranche thickness and the SSFA capital charge. However, it is also clear that tranche thickness is strongly correlated with the tranche's position in the capital structure, with more senior tranches tending to be thicker.

In order to separate out thickness from seniority, we look at a sample of outliers. The average Aaa-rated tranche thickness in Chart 3 is 46.9% with a 2.5% SSFA capital charge. If we only consider Aaa tranches with less than a 20% thickness, we get an average capital charge of 5.5%. Even though these are Aaa-rated tranches, the reduced thickness results in a higher capital charge.

What about tranches with a lower rating? The average thickness of a currently Baa-rated tranche in our sample is 7.3% with an 18% SSFA capital charge. If we only use Baa tranches with at least a 20% thickness we get a 1.7% average SSFA capital charge. Again, tranche thickness seems to be correlated with a lower SSFA capital charge, although other factors certainly apply as well.

In Chart 4, we show the relationship between the tranche attachment point and the SSFA capital charge.

Chart 4: SSFA and Attachment Points

Attach Point	Sample Size	Non-resec Cap Charge
<5%	79	88.2%
10%	655	49.8%
15%	308	7.9%
20%	267	2.5%
25%	239	1.9%
30%	328	1.6%
40%	202	1.6%
60%	111	1.9%

It is no surprise that the attachment point is heavily correlated with the SSFA capital charge. However, Chart 4 does highlight a cliff between the 5% and 15% attachment points. Because the SSFA estimates a CLO portfolio's loss using 8% plus half of defaulted assets, tranches that attach below this level will be penalized with significantly higher capital charges.

Finally, we consider whether the SSFA introduces the possibility for arbitrage. Specifically, is it cheaper from a capital perspective to have fewer tranches in a deal structure in order to maximize tranche thickness? We look at a sample transaction with a capital structure shown in Chart 5.

Chart 5: Sample Capital Structure

Tranche	Current Rating	SSFA Cap Charge
A	Aaa	1.6%
B	Aa	1.6%
C	A	2.2%
D	Baa	11.6%
E	Ba	38.4%

If we take the average SSFA capital charge of these five tranches, weighted by their current balances, we get a total capital charge of 4.05%. Now, what if we combine them into one tranche and re-calculate the SSFA capital charge? This new capital charge would be 2.8%. We tried this on a number of other transactions and had similar results. The total SSFA capital charge for holding a set of separate tranches seems to be higher than if the same tranches were combined, indicating the potential benefit of regulatory optimization in the deal structure.

Conclusion

Under the SSFA, most CLO tranches will be subject to significantly higher capital charges compared to the Basel II ratings-based requirement. Because capital charges will be especially severe for CLOs with Structured Finance buckets, we expect these buckets to continue to be absent from new-issue transactions. The SSFA seems to favor thicker tranches and tranches with attachment points above that 8+% inflection point. Finally, we found the potential for regulatory capital optimization which could influence future deal structuring decisions.

Appendix

The SSFA capital charge (K_{ssfa}) for a given tranche is determined by the following formula:

$$K_{ssfa} = \frac{(e^{a*u} - e^{a*l})}{a*(u-l)}$$

where:

$$l = A - K_A \qquad u = D - K_A$$

$$a = \frac{-1}{p * K_A} \qquad K_A = (1-W)*K_g + \frac{W}{2}$$

K_g is the weighted average Basel risk-based capital requirement of the underlying portfolio. For most assets, it is 8%. W is the percentage of the underlying portfolio that is currently defaulted or in serious delinquency. A is the tranche attachment point, D is the detachment point. p is 0.5 for securitizations and 1.5 for resecuritizations.