Update to LHATF on a Proposed Methodology for Setting Prescribed Default Costs on Existing Fixed Income Investments in VM-20

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Outline of Presentation

- Brief review of methodology (first presented March 15)

- Introduce an illustrative portfolio based on SVO industry data

- Present 2 examples from the portfolio: a junk bond and a CDO

- Display portfolio default cost results for one valuation date

- Measure sample portfolio reserves at time of issue and 3 subsequent valuation dates

- Introduce proposed refinements to the methodology

- Identify research and LHATF decisions needed to implement the methodology

- Appendices

Methodology Review
Regulator Objectives Addressed

- **<u>Four LHATF / Life PBR Subgroup objectives</u> …**
  - Default costs for the same or similar asset should be the same across all companies. They should be prescribed.
  - Companies should not be able to lower reserves by investing in riskier assets beyond some threshold or "line in the sand."
  - In the short run, default costs should reflect the current economic environment and can grade into long-term conditions.
  - The prescribed method should be relatively simple.

- **<u>Life PBR Subgroup has recently raised another objective</u> …**
  - The method should produce reasonable results as market conditions vary over time.

Methodology Review
Additional LRWG Objectives

- **<u>Incorporate risk-based elements in the methodology to the extent possible, while still keeping it a prescribed method. For example:</u>**
  - Default risk measured as of valuation date rather than as of original asset purchase date.
  - Default costs a function of credit rating, spread level, and structural risk.

- **<u>Methodology should be internally consistent in regard to:</u>**
  - Default costs on existing assets.
  - Gross spreads and default costs on new investments.
  - Market values on assets sold in the model.

Methodology Review
General Description

- **Asset-by-asset approach**
  - Maps each asset to an appropriate Benchmark asset
  - Applies relevant Val Date information for both the actual asset and the Benchmark

- **Generic component** addresses default risk of the Benchmark, and reflects:
  - Baseline long-term market default cost data, set at appropriate level of conservatism (illustrated at CTE 70).
  - Temporary adjustment, + or -, which grades off and reflects current index spread conditions relative to historical mean index spreads.

- **Specific component** addresses presumed higher or lower default risk of the specific asset relative to its Benchmark.
  - Permanent adjustment, + or -, to reflect the asset's credit rating, structural risk and its Option Adjusted Spread (OAS)

- **Constraint component** assures minimum default cost floor and maximum net spread ceiling on each asset.

Methodology Review
Key Inputs, Data Tables and Terms

- **Key inputs and data tables**
  - Five data fields for each asset (Rating, OAS, WAL, Risk, Expenses)--from company records / calculations based on NAIC definitions as appropriate
  - NAIC-prescribed parameters (N, T , X%, Y% Table, Z%)
  - NAIC-approved tables for baseline default costs, historical mean spread indices, and current spread indices which are updated periodically

- **Terms**
  - Threshold, or T: "line in the sand" rating class used in the calculations
  - Benchmark: theoretical index bond corresponding to each asset, and
    - Having a maturity equal to the asset's WAL
    - Having a rating equal to the stronger of the asset's rating or the Threshold rating

LRWG Methodology Gives no Credit for "Riskiness" beyond Threshold Asset

- Default costs were set such that the resulting net spread (if asset bought at market OAS on the Val Date) is never higher than that of the Threshold asset. The table below shows the projected net spreads for the four examples from the March 15 presentation, using an 11/30/07 valuation date. Asset #1 is the threshold asset, an A3 corporate bond trading at the current market index spread.

#	Moody's	OAS	Risk	Net Spread if Bought Asset at OAS on Val Date				
				1	2	3	4	5
1	A3	201	Low	156.5	162.0	167.4	172.8	172.8
2	A3	180	Low	140.8	146.3	151.7	157.1	157.1
3	Baa3	250	Low	156.5	162.0	167.4	172.8	172.8
4	A3	150	Low	118.3	123.8	129.2	130.9	130.9

Default Costs are Fully Prescribed and Temporarily Reflect Market Conditions

- Below is a summary of the Projected Annual Default Costs for the examples with a 11/30/2007 Val Date:

#	Moody's	OAS	Risk	Projected Annual Default Costs by Projection Year				
Year:				1	2	3	4	5
1	A3	201	Low	34.5	29.0	23.6	18.2	18.2
2	A3	180	Low	29.2	23.7	18.3	12.9	12.9
3	Baa3	250	Low	83.5	78.0	72.6	67.2	67.2
4	A3	150	Low	21.7	16.2	10.8	9.1	9.1

- For the first N years, default costs reflect the difference between current and historical mean market conditions.

- After N years default costs level off (N=3 in example).

We Now Will Use SVO Data to Develop an Illustrative Portfolio

■ At the NAIC Spring Meeting of the Rating Agency Working Group, the SVO presented a 3/13 memo from which the following industry average Schedule D asset allocations can be calculated (rounded to nearest 5%):

Allocation	NAIC 1	NAIC 2	NAIC 3	NAIC 4-6	Total
Corporate	45%	30%	5%	0%	80%
Structured	20%	0%	0%	0%	20%
Sch D Total *	65%	30%	5%	0%	100%

 * excludes Treasuries, Municipals

■ Note the above data includes P&C insurers as well as Life & Health insurers.

We Added 7 Examples & Chose Portfolio Weights to Approximate the SVO Data

#	Short Name	Book	Moody's	SVO
1	Threshold (A3)	10	A3	1
2	A3 utility	5	A3	1
3	Baa3 utility	30	Baa3	2
4	A3 industrial	5	A3	1
5	A3 private	5	A3	1
6	Ba2 sub debt	5	Ba2	3
7	Aa3 Benchmark	5	Aa3	1
8	Aa3 CDO tranche	20	Aa3	1
9	A1 Benchmark	5	A1	1
10	A1 financial	5	A1	1
11	A1 private sub debt	5	A1	1
Total		100		

… And We Developed Illustrative Input Data for the 7 Additional Examples

#	Short Name	Moody's	OAS	WAL	Risk	Inv Exp
1	Threshold (A3)	A3	201	7.25	Low	10
2	A3 utility	A3	180	7.25	Low	10
3	Baa3 utility	Baa3	250	7.25	Low	10
4	A3 industrial	A3	150	7.25	Low	10
5	A3 private	A3	275	7.25	Low	20
6	Ba2 sub debt	Ba2	1000	7.25	Medium	20
7	Aa3 Benchmark	Aa3	176.5	7.25	Low	10
8	Aa3 CDO tranche	Aa3	500	7.25	High	25
9	A1 Benchmark	A1	180.4	7.25	Low	10
10	A1 financial	A1	190	7.25	Low	10
11	A1 private sub debt	A1	230	7.25	Medium	20

- The most noteworthy of the last 7 examples are:
  - #6, Ba2 subordinated debt
  - #8, Aa3 CDO tranche

Our Examples are Based on Illustrative Values for NAIC-Prescribed Parameters

- $N = 3$ Years

- $T = A3$ Moody's Rating

- $X\% = 25\%$

- $Y\% = X\%$ if Specific XS Spread < 0, or a lookup from the Y% Table if Specific XS Spread > 0 whereby

Y varies by Risk & Rating	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1 & worse
Low	25.0%	25.0%	25.0%	25.0%	25.0%	50.0%	75.0%	100.0%	100.0%	100.0%	100.0%
Medium	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	75.0%	100.0%	100.0%	100.0%	100.0%
High	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	100.0%	100.0%	100.0%	100.0%

- $Z\% = 50\%$

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Our 6th Example is Ba2 Sub Debt, and its Benchmark is thus the Threshold

- Generic Component =
  - Baseline Default Cost for the Benchmark
  - + Index XS Spread Adjustment
- The Generic Component calculations are as follows:

	Benchmark Rating by Moody's	A3
	Benchmark Baseline Annual Default Cost	18.2
	Index XS Spread (i.e. Benchmark Current Index Spread - Mean Index Spread)	65.0
x	X% (as prescribed)	25%
x	F (i.e. the Factor that phases out the Adjustment over the prescribed 3 years)	
=	Index XS Spread Adjustment (i.e. Index XS Spread x X% x F)	
	Generic Component (i.e. 70 CTE Default Cost + Index XS Spread Adjustment)	

1	2	3	4	5
1.000	0.667	0.333	0.000	0.000
16.3	10.8	5.4	0.0	0.0
34.5	29.0	23.6	18.2	18.2

The Specific Component for our 6th Example Uses a Y% Table Lookup

- Assumed OAS: 1000 bps (vs. 201 bps Benchmark)

- Specific Component = Specific XS Spread x Y% where:

  - Specific XS Spread = OAS – Benchmark Current Index
  - Y% is a lookup from the prescribed Y% Table since OAS > Benchmark Current Index

	1	2	3	4	5

	Specific XS Spread=Asset OAS - Benchmark Current Index	799.0
x	Y% = if(Specific XS Spread <0, X%, lookup from a prescribed table)	100%
=	**Specific Component**	

799.0	799.0	799.0	799.0	799.0

The Constraint Component for our 6th Example is Zero

- **Projected Annual Default Cost Vector calculations are:**

		1	2	3	4	5
	Generic Component (i.e. 70 CTE Default Cost + Index XS Spread Adjustment)	34.5	29.0	23.6	18.2	18.2
+	Specific Component	799.0	799.0	799.0	799.0	799.0
+	Constraint Component	0.0	0.0	0.0	0.0	0.0
=	**Projected Annual Default Cost Vector**	833.5	828.0	822.6	817.2	817.2

- **The Net Spread if Bought on Val Date calculations are:**

			833.5	828.0	822.6	817.2	817.2
	Current Option Adjusted Spread (OAS) in bps	1000					
-	Investment Expenses used for Net Spread calculation	20					
-	Projected Annual Default Cost Vector		833.5	828.0	822.6	817.2	817.2
=	**Net Spread if Bought Asset at OAS on Val Date**		156.5	162.0	167.4	172.8	172.8

- **The Net Spreads equal those for the Threshold**

Our 8th Example is Aa3 CDO Tranche, and its Benchmark is thus Aa3

- Generic Component =
  - Baseline Default Cost for the Benchmark
  - + Index XS Spread Adjustment
- The Generic Component calculations are as follows:

	1	2	3	4	5

Benchmark Rating by Moody's		Aa3
Benchmark Baseline Annual Default Cost		3.8
Index XS Spread (i.e. Benchmark Current Index Spread - Mean Index Spread)		76.6
x	X% (as prescribed)	25%

		1	2	3	4	5
x	F (i.e. the Factor that phases out the Adjustment over the prescribed 3 years)	1.000	0.667	0.333	0.000	0.000
=	Index XS Spread Adjustment (i.e. Index XS Spread x X% x F)	19.2	12.8	6.4	0.0	0.0
	Generic Component (i.e. 70 CTE Default Cost + Index XS Spread Adjustment)	23.0	16.6	10.2	3.8	3.8

The Specific Component for our 8th Example Uses a Y% Table Lookup

- **Assumed OAS: 500 bps (vs. 176.5 bps Benchmark)**

- **Specific Component = Specific XS Spread x Y% where**
  - Specific XS Spread = OAS – Benchmark Current Index
  - Y% is a lookup from the prescribed Y% Table since OAS > Benchmark Current Index.

		1	2	3	4	5

	Specific XS Spread=Asset OAS - Benchmark Current Index Spread	323.5
x	Y% = if(Specific XS Spread <0, X%, lookup from a prescribed table)	75%
=	**Specific Component**	

242.6	242.6	242.6	242.6	242.6

The Constraint Component for our 8th Example is Greater Than Zero

■ **Projected Annual Default Cost Vector calculations are:**

		1	2	3	4	5
	Generic Component (i.e. 70 CTE Default Cost + Index XS Spread Adjustment)	23.0	16.6	10.2	3.8	3.8
+	Specific Component	242.6	242.6	242.6	242.6	242.6
+	Constraint Component	67.9	68.8	69.8	70.8	70.8
=	**Projected Annual Default Cost Vector**	333.5	328.0	322.6	317.2	317.2

■ **Net Spread if Bought on Val Date calculations are:**

	Current Option Adjusted Spread (OAS) in bps	500				
-	Investment Expenses used for Net Spread calculation	25				
-	Projected Annual Default Cost Vector	333.5	328.0	322.6	317.2	317.2
=	**Net Spread if Bought Asset at OAS on Val Date**	156.5	162.0	167.4	172.8	172.8

■ The Constraint Component is the balancing item so to satisfy the Maximum Net Spread Constraint.

Below we show the Net Spread if Portfolio Bought at OAS on a 11/30/07 Val Date

#	Short Name	Y%	Net Spread if Bought Asset at OAS on Val Date					Average
Year:			1	2	3	4	5	
1	Threshold	75%	156.5	162.0	167.4	172.8	172.8	168.3
2	A3 utility	25%	140.8	146.3	151.7	157.1	157.1	152.6
3	Baa3 utility	100%	156.5	162.0	167.4	172.8	172.8	168.3
4	A3 industrial	25%	118.3	123.8	129.2	130.9	130.9	127.9
5	A3 private	75%	156.5	162.0	167.4	172.8	172.8	168.3
6	Ba2 sub debt	100%	156.5	162.0	167.4	172.8	172.8	168.3
7	Aa3 Benchmark	25%	143.5	149.9	156.3	162.7	162.7	157.4
8	Aa3 CDO tranche	75%	156.5	162.0	167.4	172.8	172.8	168.3
9	A1 Benchmark	25%	145.4	151.5	157.6	163.7	163.7	158.7
10	A1 financial	25%	152.6	158.7	164.8	170.9	170.9	165.9
11	A1 private sub debt	50%	156.5	162.0	167.4	172.8	172.8	168.3
Total								
Weighted Average			152.4	158.0	163.5	168.9	168.9	164.4

■ The net spread on each asset is ≤ that for the Threshold.

Below we show the Portfolio Projected Default Costs on a 11/30/07 Val Date

#	Short Name	Y%	Projected Annual Default Costs by Projection Year					Average
Year:			1	2	3	4	5	
1	Threshold	75%	34.5	29.0	23.6	18.2	18.2	22.7
2	A3 utility	25%	29.2	23.7	18.3	12.9	12.9	17.4
3	Baa3 utility	100%	83.5	78.0	72.6	67.2	67.2	71.7
4	A3 industrial	25%	21.7	16.2	10.8	9.1	9.1	12.1
5	A3 private	75%	108.5	103.0	97.6	92.2	92.2	96.7
6	Ba2 sub debt	100%	833.5	828.0	822.6	817.2	817.2	821.7
7	Aa3 Benchmark	25%	23.0	16.6	10.2	3.8	3.8	9.1
8	Aa3 CDO tranche	75%	333.5	328.0	322.6	317.2	317.2	321.7
9	A1 Benchmark	25%	25.0	18.9	12.8	6.7	6.7	11.7
10	A1 financial	25%	27.4	21.3	15.2	9.1	9.1	14.1
11	A1 private sub debt	50%	63.5	58.0	52.6	47.2	47.2	51.7
Total								
Weighted Average			151.8	146.2	140.7	135.3	135.3	139.8

- Default costs reflect current market conditions for the first N years and then level off.

In order to illustrate how the methodology works over time…

- We evaluated the portfolio at 4 Val Dates:

Val Date	Portfolio WAL
2/28/2005	10.00
12/31/2006	8.17
11/30/2007	7.25
10/31/2008	6.33

- We developed a simple funding agreement (FA) example in which we assumed that on 2/28/2005:
  - The insurer issued a 10y funding agreement with a coupon of 5.0%, and
  - Purchased our sample cash-matched portfolio of 10y bullet securities.

- We note that this closed block single premium FA portfolio example is an oversimplification of a VM20 portfolio, but it should serve as an upper bound on the degree of a portfolio's Deterministic Reserve sensitivity that would result from the effect of asset spread changes on projected default costs.

We likewise developed illustrative OAS values on each Val Date

# Short Name	Book	Val Date OAS			
		2/28/2005	12/31/2006	11/30/2007	10/31/2008
1 Threshold (A3)	10	93.4	98.7	201	596.5
2 A3 utility	5	85	90	180	570
3 Baa3 utility	30	110	120	250	800
4 A3 industrial	5	65	70	150	550
5 A3 private	5	120	130	275	700
6 Ba2 sub debt	5	450	480	1000	1500
7 Aa3 Benchmark	5	65	75.3	176.5	478.6
8 Aa3 CDO tranche	20	230	250	500	1000
9 A1 Benchmark	5	71.1	81	180.4	507.5
10 A1 financial	5	80	90	190	600
11 A1 private sub debt	5	95	110	230	800
Total	100				
Weighted Average		139.9	152.2	314.2	785.0
WAL		10.00	8.16	7.25	6.33

- The OAS for asset #1, 7 & 9 match the Current Index on each Val Date
- The OAS values for other assets are hypothetical illustrations

On 2/28/05 the initial portfolio was purchased at a 5.829% gross yield

Bond #	Short Name	Weight	Moody's	OAS	WAL	Treasury	Coupon
1	Threshold	10	A3	93.4	10	4.43%	5.364%
2	A3 utility	5	A3	85	10	4.43%	5.280%
3	Baa3 utility	30	Baa3	110	10	4.43%	5.530%
4	A3 industrial	5	A3	65	10	4.43%	5.080%
5	A3 private	5	A3	120	10	4.43%	5.630%
6	Ba2 sub debt	5	Ba2	450	10	4.43%	8.930%
7	Aa3 Benchmark	5	Aa3	65	10	4.43%	5.080%
8	Aa3 CDO tranche	20	Aa3	230	10	4.43%	6.730%
9	A1 Benchmark	5	A1	71.1	10	4.43%	5.141%
10	A1 financial	5	A1	80	10	4.43%	5.230%
11	A1 private sub debt	5	A1	95	10	4.43%	5.380%

The Threshold Current Spread Index doubled in 2007 and then tripled in 2008

Threshold (A3) Current Index (in bps)

Chart data points:
- Dec-04: 93.40
- Dec-06: 98.70
- Dec-07: 201.00
- Dec-08: 596.50

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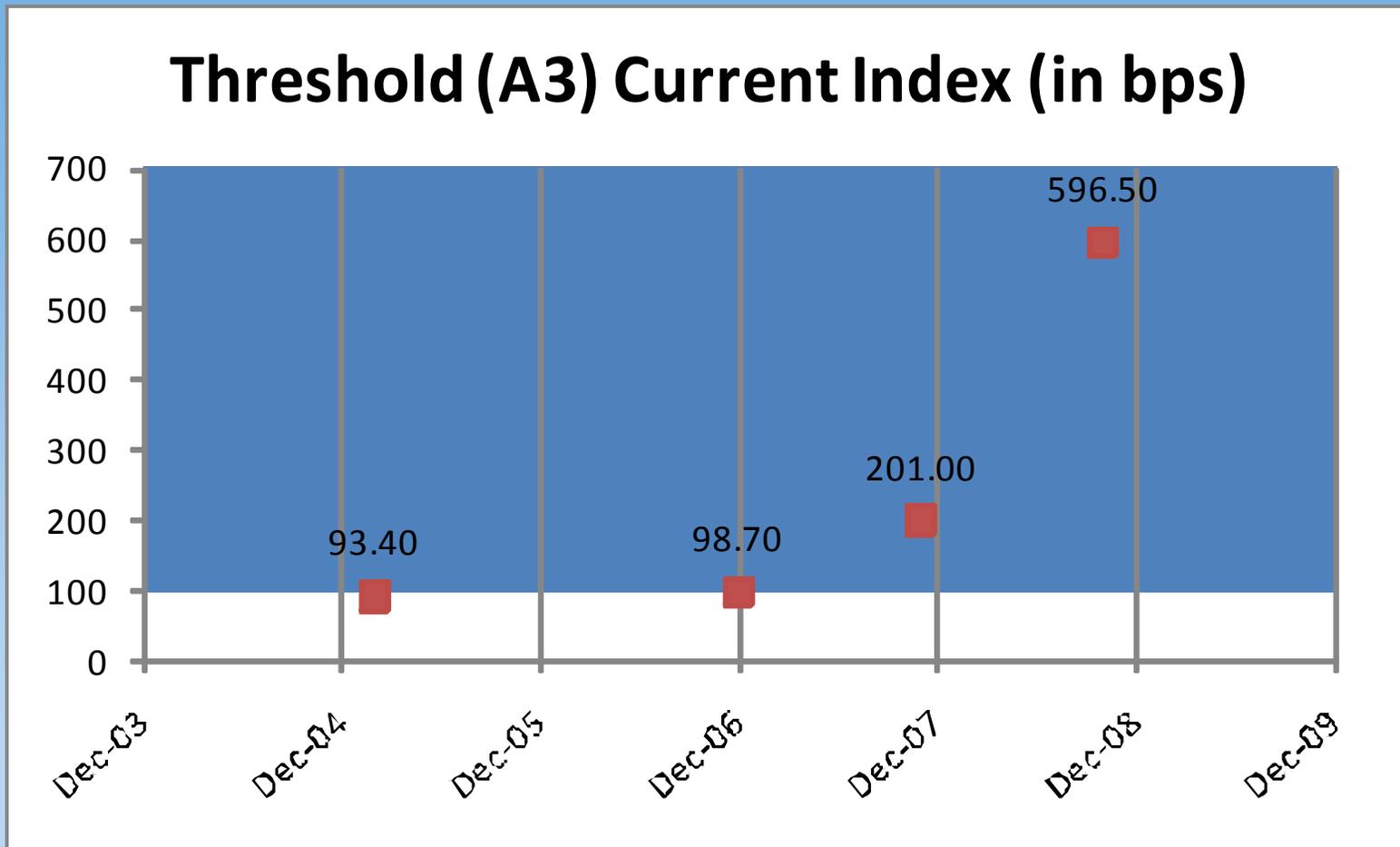
The jump in spreads materially increased the illustrative Deterministic Reserve

- If VM20 applied for the 5% funding agreement (FA), then the Deterministic Reserve would have increased about 10% over the period shown. Statement asset values remain unchanged at 100.
  - Avg Default Cost = average annual default costs over remaining life
  - Avg Net Yield = average coupon minus average default cost minus expenses, representative of avg discount rate for deterministic reserve

- For contrast, note that the asset market values declined 24%

Val Date	Average Coupon	Average Default Cost	Average Expenses	Average Net Yield	Approximate Det Reserve	Assets MV
2/28/2005	5.829%	0.710%	0.145%	4.974%	100.2	100.00
12/31/2006	5.829%	0.750%	0.145%	4.934%	100.4	97.51
11/30/2007	5.829%	1.398%	0.145%	4.286%	104.4	94.12
10/31/2008	5.829%	2.526%	0.145%	3.158%	110.5	76.08

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The Proposed Refinements in Appendix C do little to dampen volatility on their own

- If we use a portfolio Max Net Spread Constraint and a new Y% Table, the relevant part of the Y% table is as follows:

Y varies by Risk & Rating	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3
Low	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	30.0%	35.0%	40.0%	45.0%	50.0%
Medium	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	35.0%	40.0%	45.0%	50.0%
High	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	40.0%	45.0%	50.0%

- With the threshold at A3, the maximum net spread constraint is very strong even when applied in aggregate.

Val Date	Average Coupon	Average Default Cost	Average Expenses	Average Net Yield	Approximate Det Reserve	Assets MV
2/28/2005	5.829%	0.638%	0.145%	5.046%	99.6	100.00
12/31/2006	5.829%	0.751%	0.145%	4.932%	100.4	97.51
11/30/2007	5.829%	1.370%	0.145%	4.313%	104.2	94.12
10/31/2008	5.829%	2.410%	0.145%	3.274%	109.8	76.08

Changing the Threshold to Baa1 does result in somewhat less volatility

Val Date	Average Coupon	Average Default Cost	Average Expenses	Average Net Yield	Approximate Det Reserve	Assets MV
2/28/2005	5.829%	0.566%	0.145%	5.118%	99.1	100.00
12/31/2006	5.829%	0.724%	0.145%	4.960%	100.3	97.51
11/30/2007	5.829%	1.292%	0.145%	4.391%	103.7	94.12
10/31/2008	5.829%	1.927%	0.145%	3.757%	106.9	76.08

- Using a Baa1 Threshold, combined with the previous refinements, lowers the run-up in reserves from about 10% to about 8% (106.9 / 99.1 -1 = 7.9%).

- Starting reserve at 2/28/05 is also 1% lower than with original methodology.

Further testing is needed to determine the impact on other policy types

- Unlike the FA portfolio, a typical life insurance portfolio has renewal premiums and reinvestment of asset cash flows.

- Assuming the LRWG's goal of a consistent framework for default costs on existing assets and net spreads on new investments can be reached, the impact of fluctuations in market asset spreads on reserves is likely to depend on the maturity and funding pattern of the block.
  - Reserves for relatively young blocks may be more sensitive to the impact on prescribed net spreads on new investments.
  - Reserves for relatively seasoned blocks may be more sensitive to the impact on prescribed default costs on existing assets.

- Formal testing of different life insurance model offices could be valuable once that consistent framework has been sufficiently defined and has gained regulatory support.

Proposed Refinements as of 6/11/09

- Constructive feedback from regulators, Academy groups, Asset Subgroup, and industry has focused on certain areas (list not exhaustive):
    - Greater simplicity and feasibility (avoid "false precision")
    - Amount of separate data and instructions to be updated by NAIC
    - Concerns about volatility of reserves
    - Concerns about ultimate default costs not returning to historical norms
    - Aggregate rather than asset-by-asset maximum net spread constraint would be more consistent with goal of encouraging diversified investment grade portfolios
    - Commercial mortgages not addressed

- LRWG is recommending consideration of a few refinements which are explained in Appendix C covering:
    - A less steep progression of Y% factors together with an aggregate maximum net spread constraint component (aimed at reducing volatility and not unduly penalizing diversified investment grade portfolios)
    - Removal of the "Risk" dimension of the Y% table (aimed at simplicity)

- We expect to recommend additional refinements, especially aimed at developing reasonable ultimate default costs.

Some Further Academy Research is Needed to Implement the Methodology

- Finalize / test proposed and additional refinements

- Optimal data sources for
    - Default data
    - Spread data

- Optimal interpolation/smoothing algorithms to calculate
    - Baseline Annual Default Costs
    - Current Index Spreads
    - 7y Mean Index Spreads

- Application of the methodology to commercial mortgage loans

- Application of the methodology to impaired assets

Some LHATF Decisions are Needed to Implement the Methodology

- **Prescribed values:** for T, N, X%, Y% Table and Z%

- **For Rating:**
  - A formula for how to translate two or three Moody's/S&P/Fitch ratings, which sometimes differ by 1 or more notches, into one Rating

- **Asset Class Structural Risk (Risk):**
  - How to define Low Risk, Medium Risk and High Risk (or possible 4+ categories)

- **Investment Expenses (Expenses):**
  - Should the NAIC provide guidance or perhaps prescribe Expenses for different asset classes?

Appendices

A. **Graphs of Illustrative Data**

B. **Tables of Illustrative Portfolio Results**

C. **Proposed Refinements to the 3/15/09 Methodology**

Appendix A – Illustrative Data for Baseline Defaults & Gross Spreads

- Graphs of Illustrative Data for a 10/31/2008 Val Date:
  - Graphs of Baseline Annual Default Costs as of 2/2008
    - A3/A- and Stronger
    - Baa/BBB and Ba/BB
  - Graph of Mean Index Gross Spreads as of 10/31/2008
  - Graph of Current Index Gross Spreads as of 10/31/2008
- Note that Graphs for a 11/30/2007 Val Date were in the 3/15/2009 presentation

# Baseline Annual Default Costs for Ratings of A3/A- or Stronger

- Baseline annual default costs shown below were estimated using estimates for 70 CTE recover rates and 70 CTE cumulative default rates based on Moody's data.
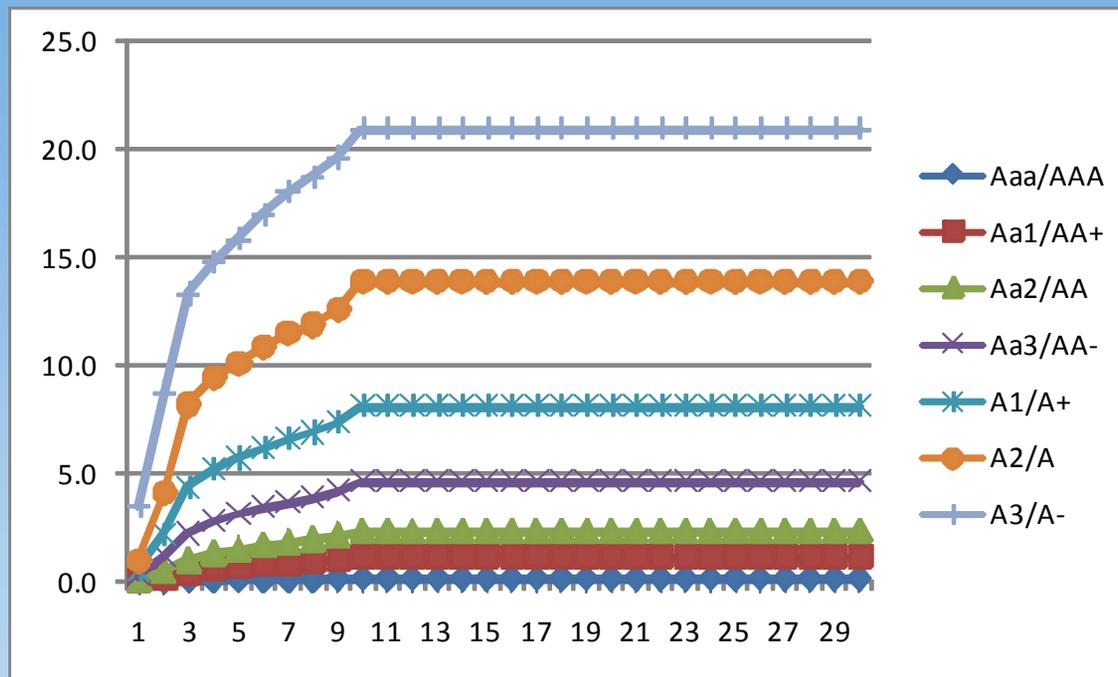

- The above calculation results assume that every insurer owns every bond in the market and do not reflect the variability of results if it were assumed that every insurer owns S statistically independent bonds.

Baseline Annual Default Costs for Ratings between Baa1/BBB+ and Ba3/BB-

- Baseline annual default costs shown below were estimated using estimates for 70 CTE recover rates and 70 CTE cumulative default rates based on Moody's data.

- The above calculation results assume that every insurer owns every bond in the market and do not reflect the variability of results if it were assumed that every insurer owns S statistically independent bonds.
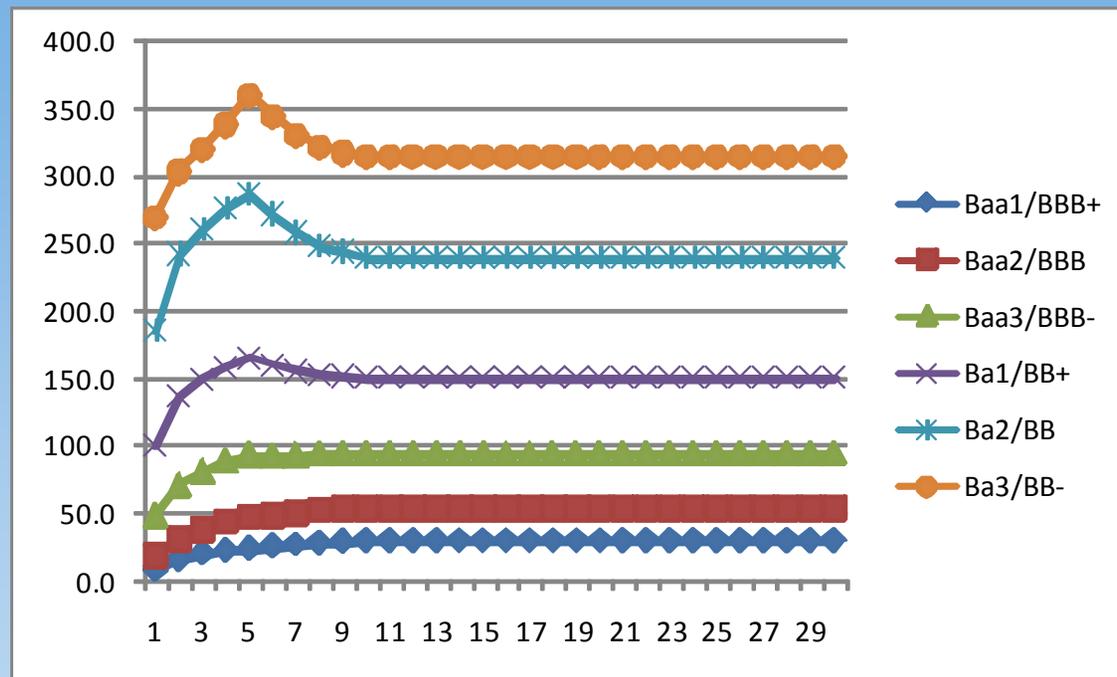
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This Graphs shows 7y Mean Index Gross Spreads as of 10/31/2008
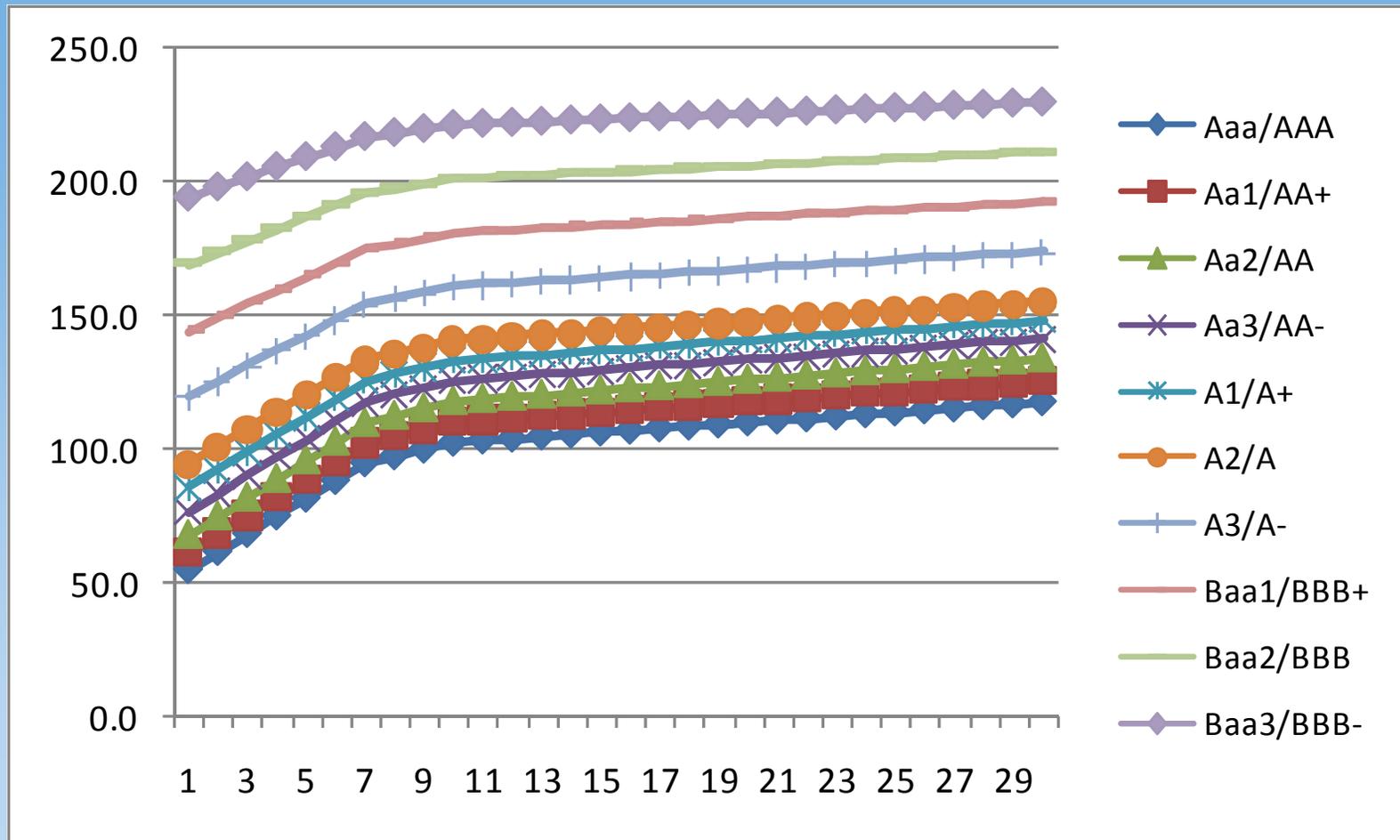
This Graph shows Current Index Gross Spreads as of 10/31/2008
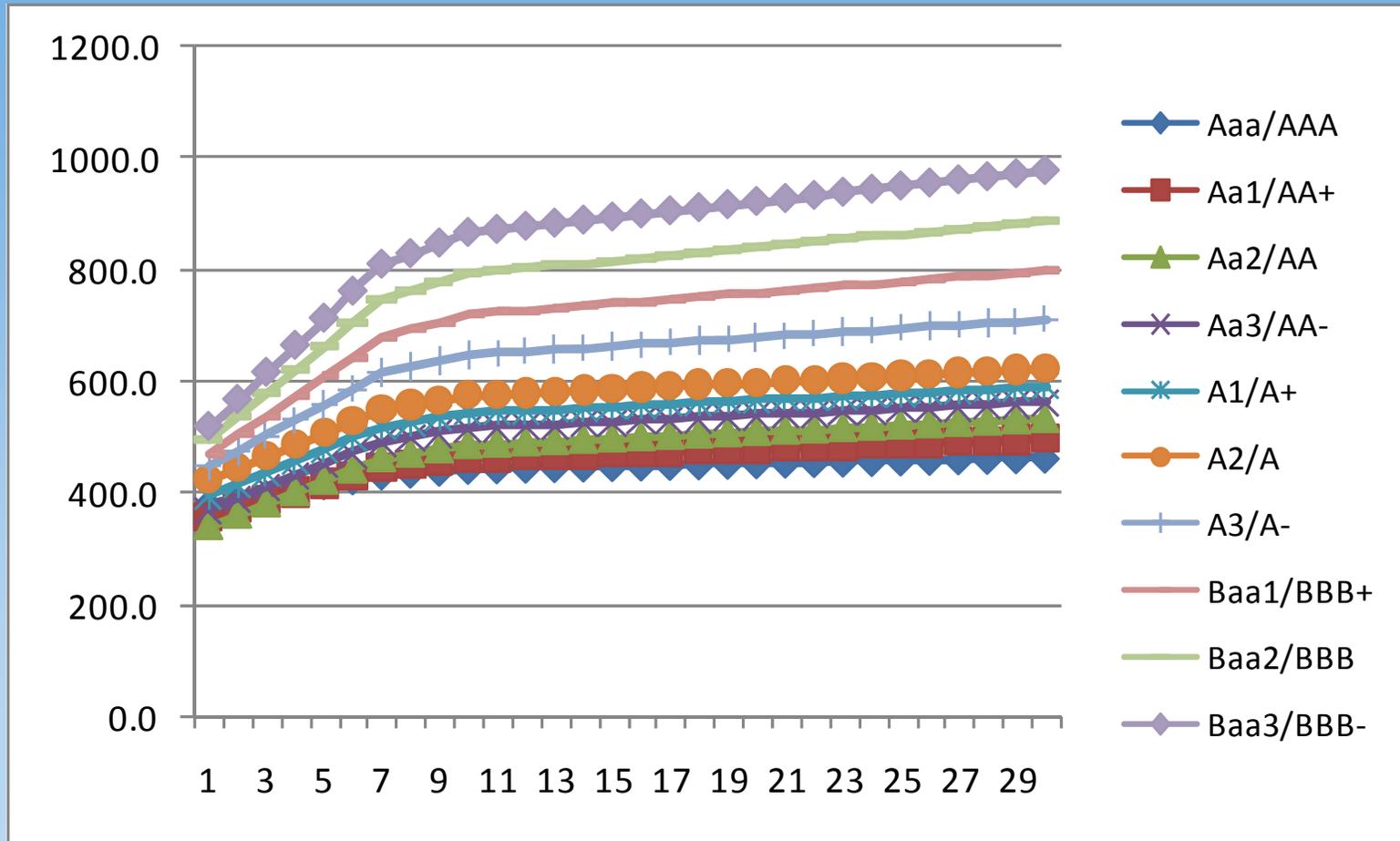
Appendix B – Projected Default Costs on a 10/31/08 Val Date

#	Short Name	Y%	Projected Annual Default Costs by Projection Year					Average
Year:			1	2	3	4	5	
10/31/2008								
1	Threshold	75%	128.9	91.7	54.5	17.3	17.3	52.6
2	A3 utility	25%	122.3	85.1	47.9	10.7	10.7	46.0
3	Baa3 utility	100%	332.4	295.2	258.0	220.8	220.8	256.1
4	A3 industrial	25%	117.3	80.1	42.9	8.6	8.6	42.5
5	A3 private	75%	232.4	195.2	158.0	120.8	120.8	156.1
6	Ba2 sub debt	100%	1,032.4	995.2	958.0	920.8	920.8	956.1
7	Aa3 Benchmark	25%	94.9	64.4	34.0	3.5	3.5	32.4
8	Aa3 CDO tranche	75%	532.4	495.2	458.0	420.8	420.8	456.1
9	A1 Benchmark	25%	102.9	70.7	38.5	6.3	6.3	36.8
10	A1 financial	25%	132.4	95.2	61.6	29.4	29.4	61.2
11	A1 private sub debt	50%	332.4	295.2	258.0	220.8	220.8	256.1
Total								
Weighted Average			327.4	290.8	254.4	218.2	218.2	252.6

- Default costs reflect current market conditions for the first N years and then level off.

Appendix B – Net Spread if Bought Assets at OAS on a 10/31/08 Val Date

#	Short Name	Y%	Net Spread if Bought Asset at OAS on Val Date					Average
Year:			1	2	3	4	5	
10/31/2008								
1	Threshold	75%	457.6	494.8	532.0	569.2	569.2	533.9
2	A3 utility	25%	437.7	474.9	512.1	549.3	549.3	514.0
3	Baa3 utility	100%	457.6	494.8	532.0	569.2	569.2	533.9
4	A3 industrial	25%	422.7	459.9	497.1	531.4	531.4	497.5
5	A3 private	75%	457.6	494.8	532.0	569.2	569.2	533.9
6	Ba2 sub debt	100%	457.6	494.8	532.0	569.2	569.2	533.9
7	Aa3 Benchmark	25%	373.7	404.2	434.6	465.1	465.1	436.2
8	Aa3 CDO tranche	75%	457.6	494.8	532.0	569.2	569.2	533.9
9	A1 Benchmark	25%	394.6	426.8	459.0	491.2	491.2	460.7
10	A1 financial	25%	457.6	494.8	528.4	560.6	560.6	528.8
11	A1 private sub debt	50%	457.6	494.8	532.0	569.2	569.2	533.9
Total								
Weighted Average			447.5	484.1	520.6	556.8	556.8	522.3

- The net spread on each asset is $\leq$ that for the Threshold.

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Appendix C – Proposed Refinements to the 3/15/09 Methodology

- **Y% Table (Specific Component—see slide 12)**
  - In the 3/15/09 presentation, the Y% Table had values of 25%, 50%, 75% and 100% with the step-ups ramping up steeply for A bond categories and reaching 100% for all Baa categories (NAIC 2) and below.
  - LRWG recommends the maximum Y% value be less than 100% and the values are the same for Threshold and stronger Ratings. For example, a potential scale could be 25% (Baa1 and above), 75% (Caa2 and below) and interpolated in between.

- **Maximum Net Spread Constraint**
  - In the 3/15/09 presentation, the Maximum Net Spread Constraint was applied on an asset-by-asset basis.
  - LRWG recommends this constraint be applied on a portfolio basis.
  - This mostly would have impact in tandem with the Y% recommendation.

Appendix C – Proposed Refinements to the 3/15/09 Methodology (continued)

- **LRWG encourages LHATF to consider two potential simplifications that have not yet been analyzed:**
  - The Y% Table could be modified so it varies by Rating but not by (Structural) Risk. Eliminating the "Risk" dimension would substantially simplify the methodology, and that result would clearly be attractive if it does not compromise accuracy.

  - Alternatively, if we can find an acceptable source for high yield bond index spreads, the Y% Table could be modified so it varies by Risk but not by Rating and we could simplify the definition of the Benchmark by eliminating the current reference to the Threshold.

  - In either case, the Maximum Net Spread Constraint Component would be relied on to address situations missed by a simpler Y% Table.