Date: 5/18/21

LIFE RISK-BASED CAPITAL (E) WORKING GROUP
Thursday, May 20, 2021
12:00 – 1:00 p.m. ET / 11:00 a.m. – 12:00 p.m. CT / 10:00 – 11:00 a.m. MT / 9:00 – 10:00 a.m. PT

ROLL CALL

Philip Barlow, Chair	District of Columbia	William Leung	Missouri
Jennifer Li	Alabama	Rhonda Ahrens	Nebraska
Thomas Reedy	California	Seong-min Eom	New Jersey
Wanchin Chou	Connecticut	Bill Carmello	New York
Sean Collins	Florida	Andrew Schallhorn	Oklahoma
Vincent Tsang	Illinois	Mike Boerner/Rachel Hemphill	Texas
Mike Yanacheak/Carrie Mears	Iowa	Tomasz Serbinowski	Utah
John Robinson	Minnesota		

NAIC Support Staff: Dave Fleming

AGENDA

1. Discuss the Moody's Analytics Report on Risk Premium—*Philip Barlow (DC)* Attachment 1

2. Discuss Bond Size Adjustment—*Philip Barlow (DC)* Attachment 2

3. Discuss Upcoming Virtual Meetings— *Philip Barlow (DC)*

4. Discuss Any Other Matters Brought Before the Working Group—*Philip Barlow (DC)*

5. Adjournment

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Attachment 1

MOODY'S ANALYTICS

Better Faster Decisions

RBC C1 Bond Factors & the Risk Premium
For Discussion with Life Risk-Based Capital (E) Working Group

May 2021

Moody's (NYSE:MCO) is a global integrated risk assessment firm that empowers organizations to make better decisions. Its data, analytical solutions and insights help decision-makers identify opportunities and manage the risks of doing business with others. We believe that greater transparency, more informed decisions, and fair access to information open the door to shared progress. With over 11,400 employees in more than 40 countries, Moody's combines an international presence with local expertise and more than a century of experience in financial markets.
Learn more at moodys.com/about.

Moody's Corporation is comprised of two separate companies:
Moody's Investors Service (MIS) and Moody's Analytics (MA).

Moody's Investors Service (MIS) provides investors with a comprehensive view of global debt markets through credit ratings and research. Moody's Analytics (MA) provides data, analytics, and insights to equip leaders of financial, non-financial, and government organizations with effective tools to understand a range of risks.

Throughout this document, "MIS rating" refers to a MIS credit rating.
And while references to MIS are made, **the views and opinions in this document are solely of MA.**

Scope: What we were asked to do

Develop RBC C1 bond factors that better reflect economic risks

Methodologies and data rely entirely on public sources that are accessible and reproducible by NAIC and industry

Articulation of data, methodology and limitations

MA cautions isolated modifications to modeling features and parameters without considerations of the interconnected elements

Heuristic Performance Criteria

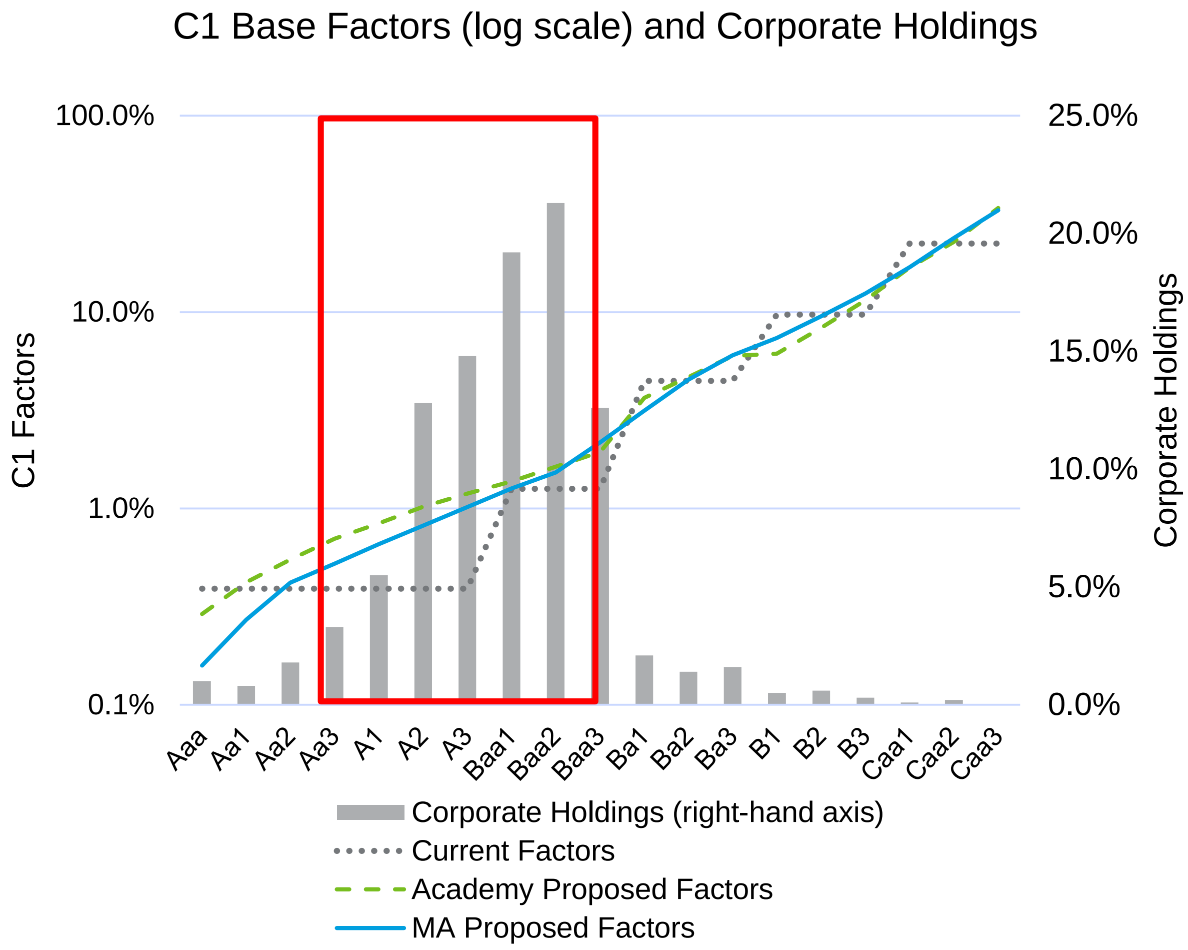
MA C1 Factors*

- Better represent the historical experience of life insurers' holdings
- More accurately reflect empirically observed issuer diversification benefits
- Challenges:
  - C1 factors are cardinal, and a function of MA's default rates estimated using MIS corporate default rates that reflect the historical experience of life insurance corporate holdings for each MIS rating, which are opinions of ordinal, horizon-free credit risk, rather than cardinal
  - C1 factors are static while risks change over time, across ratings and asset classes
  - Applied to range of credit assets, based on their NAIC designations (i.e., the second lowest NRSRO rating)
- While the ACLI, the industry, the NAIC, and commissioners have been engaged extensively, the views are solely those of MA and based on an objective assessment of supporting documentation, and data and modeling approaches that in MA's experience viewed as best practice

*'*MA's Revisions to the RBC C1 Bond Factors'* April 2021 report articulates the data, methodology and limitations associated with the MA's C1 factors

MA's C1 Base Factors

Risk Premium is one of several interconnected modifications with largest impact



- **Replace the economic state model with a correlation model** to better align with default correlation and issuer diversification observed empirically, which also affects PAFs
- **Update the default rate and recovery rate** to better align with historical experience of life companies' holdings
- **Set Risk Premium at expected loss plus 0.5 standard deviation** (compared to just expected loss) to better align with current reserving standards
- **Update tax rate to 21% and discount rate to 3.47%** as requested by NAIC; compared with 5% under the current and Academy formula

Overview of Risk Premium Modification

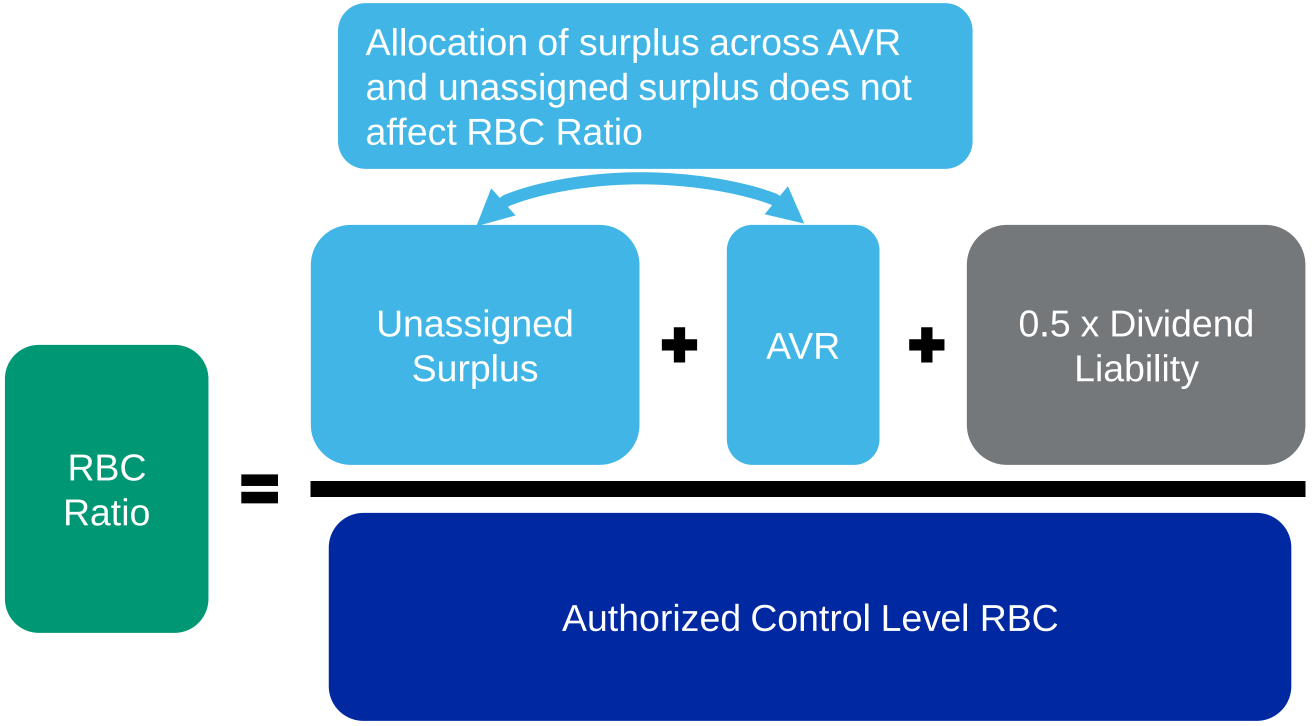
Risk Premium is one of several interconnected modifications with largest impact

- C1 RBC is the minimum required capital above statutory reserves to buffer against a tail loss
  - Risk Premium acts as an offset to C1 RBC
- Variation in industry reserving standards
  - VM-20 and VM-21 explicitly require that reserves cover CTE 70, or approximately 88th percentile, default loss, without accounting for any assets backing Asset Valuation Reserve (AVR)
  - VM-20 applies to new life products after 2017; with increasing coverage for new bond purchases
  - New reserve standards such as VM-22 are also expected to follow the same framework and cover CTE 70 default loss
  - Existing policies follow industry reserving standards, which generally aim to cover moderately adverse conditions; AVR used in Cash Flow Testing (CFT) of these reserves is excluded from Total Adjusted Capital (TAC), and thus functions as additional CFT reserves rather than available capital
- MA's Modifications
  - Together with many other interconnected model features described in later slides, Risk Premium is updated to be **expected loss plus 0.5 standard deviation** recognizing variation in industry reserving standards and to closer align with PBR and other reserving standards generally aimed to cover moderately adverse conditions

Aligning C1 Factors with AVR

The Academy raised concerns related to Risk Premium and AVR consistency

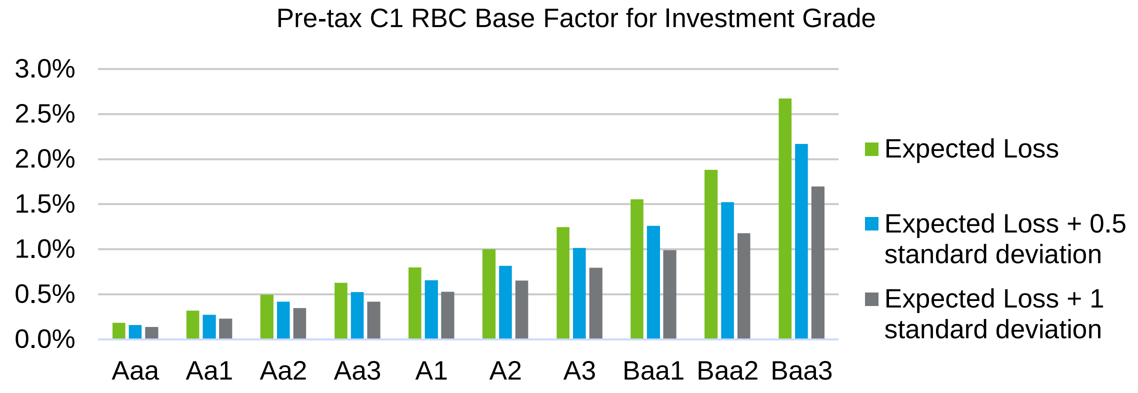
- AVR is an allocation of surplus to smooth the cyclicality of credit default events
- Allocation of surplus across AVR and unassigned surplus does not affect RBC Ratio
- While historically the basic contribution of AVR has been set to be the same as Risk Premium, the alignment between AVR and Risk Premium is not relevant to the RBC framework, whose purpose is to help "identify potentially weakly capitalized companies"

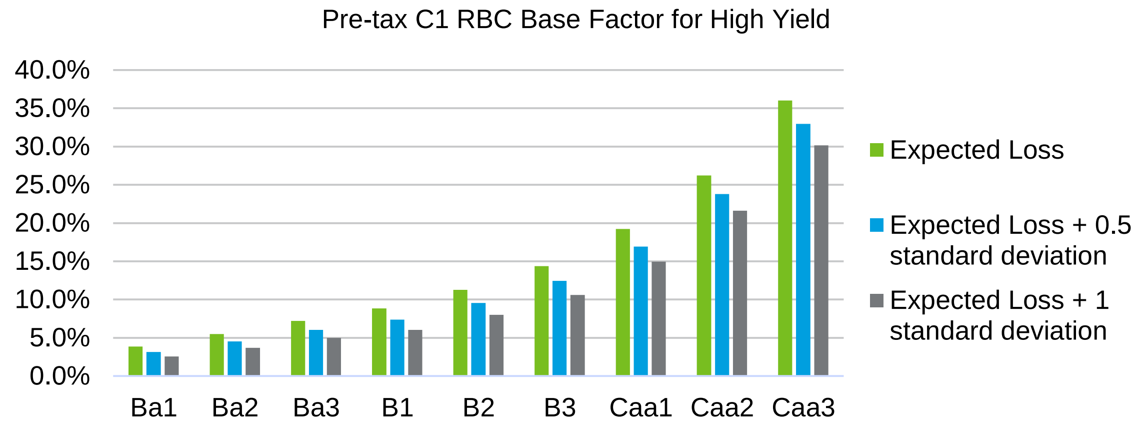


Sensitivity Analysis of Risk Premium

All values are based on MA's formula including all targeted modifications

- Risk Premium level:
  - Expected loss (used by the Academy) along with MA's targeted modifications not included in the Academy's proposal
  - **Expected loss + 0.5 standard deviation (used by MA)**
  - Expected loss + 1 standard deviation
- Higher level of Risk Premium leads to lower C1 base factors, as more losses will be covered by Risk Premium
- On average, a decrease (increase) of 0.5 standard deviation from MA's Risk Premium, increases (decreases) C1 base factors by ~20% for investment grade and around 15% for high yield





Risk Premium for Different Rating Categories

Default losses are not normally distributed

	Expected Loss		Expected Loss + 0.5 Standard Deviation		Expected Loss + 1 Standard Deviation	
	Value	**Loss Percentile**	**Value**	**Loss Percentile**	**Value**	**Loss Percentile**
Aaa	0.003%	75.0%	0.007%	83.7%	0.011%	89.7%
Aa1	0.008%	66.4%	0.015%	79.9%	0.021%	87.5%
Aa2	0.022%	61.4%	0.032%	76.0%	0.042%	85.8%
Aa3	0.032%	59.2%	0.046%	75.2%	0.059%	85.7%
A1	0.048%	58.5%	0.065%	74.8%	0.082%	85.3%
A2	0.070%	57.5%	0.092%	74.0%	0.113%	85.0%
A3	0.096%	57.2%	0.123%	74.4%	0.150%	85.5%
Baa1	0.134%	56.7%	0.168%	73.4%	0.202%	85.4%
Baa2	0.187%	55.1%	0.229%	73.1%	0.271%	85.1%
Baa3	0.303%	55.4%	0.362%	73.3%	0.421%	84.7%
Ba1	0.493%	55.0%	0.579%	72.6%	0.665%	84.8%
Ba2	0.809%	54.0%	0.932%	71.8%	1.055%	84.8%
Ba3	1.071%	54.5%	1.225%	72.4%	1.379%	84.7%
B1	1.429%	53.9%	1.619%	72.2%	1.809%	84.7%
B2	1.933%	53.2%	2.168%	71.5%	2.404%	84.7%
B3	2.545%	52.9%	2.834%	71.4%	3.123%	84.9%
Caa1	3.424%	53.0%	3.787%	71.3%	4.151%	84.1%
Caa2	4.816%	52.4%	5.274%	70.8%	5.731%	84.1%
Caa3	7.406%	51.9%	7.998%	70.2%	8.591%	83.9%

All values in this table are calculated based on MA’s correlation model including other targeted modifications.

Most Impactful Targeted Modifications

Economic state model overstates diversification across issuers relative to that observed empirically, resulting in C1 base factors that potentially understate credit losses and PAFs that are overly punitive (lenient) to portfolios with a smaller (larger) number of issuers

Default rate term structures representing the historical experience of life insurers' U.S. corporate holdings through 2020

Risk Premium (an offset to C1 base factors) set at expected loss plus 0.5 standard deviation, to closer align with PBR (VM20 and VM21) and other reserving standards generally aimed at covering moderately adverse conditions.

Discount rate and tax rate updated to reflect the current interest rate environment and 2017 tax reform

MA C1 Factors

MA correlation model results in C1 base factors that are more differentiated across NAIC designation categories, and PAFs that are a more accurate reflection of diversification benefits

MA default rates tend to have a steeper slope (more differentiated across MIS ratings) than those proposed by the Academy, with differentiation more closely aligning with benchmarks

A higher Risk Premium lowers the C1 base factors and increases their differentiation across the NAIC designation categories.

Per NAIC request, the discount rate is set at 3.47%, as compared to the 5% under the current and Academy formula. Tax rate is set at 21%

Recap of C1 Factors

C1 Base Factors

MIS Rating	Current	Academy Proposed Base Factors	MA Base Factors
Aaa	0.390%	0.290%	0.158%
Aa1	0.390%	0.420%	0.271%
Aa2	0.390%	0.550%	0.419%
Aa3	0.390%	0.700%	0.523%
A1	0.390%	0.840%	0.657%
A2	0.390%	1.020%	0.816%
A3	0.390%	1.190%	1.016%
Baa1	1.260%	1.370%	1.261%
Baa2	1.260%	1.630%	1.523%
Baa3	1.260%	1.940%	2.168%
Ba1	4.460%	3.650%	3.151%
Ba2	4.460%	4.660%	4.537%
Ba3	4.460%	5.970%	6.017%
B1	9.700%	6.150%	7.386%
B2	9.700%	8.320%	9.535%
B3	9.700%	11.480%	12.428%
Caa1	22.310%	16.830%	16.942%
Caa2	22.310%	22.800%	23.798%
Caa3	22.310%	33.860%	32.975%

(1) 2.7X 4.1X

(2) 1.03X 1.23X

Portfolio Adjustment Factors (PAFs)

# of Issuers in the Portfolio	Current	Academy Proposed PAF	MA PAF
10	2.50	7.50	5.87 (3)
50	2.50	2.90	2.40
100	1.90	2.33	1.96
300	1.30	1.36	1.22
500	1.16	1.16	1.07
1000	1.03	0.95	0.95
2000	0.97	0.85	0.88
3000	0.94	0.82	0.86 (3)

» (1) MA default rates, correlation model and Risk Premium lead to more differentiated factors across the MIS ratings scale

» (2) Economic state model results in counterfactual increases (and decreases) to C1 base factors along the rating scale; e.g., Ba3 factor is almost identical to B1 factor under the Academy's formula

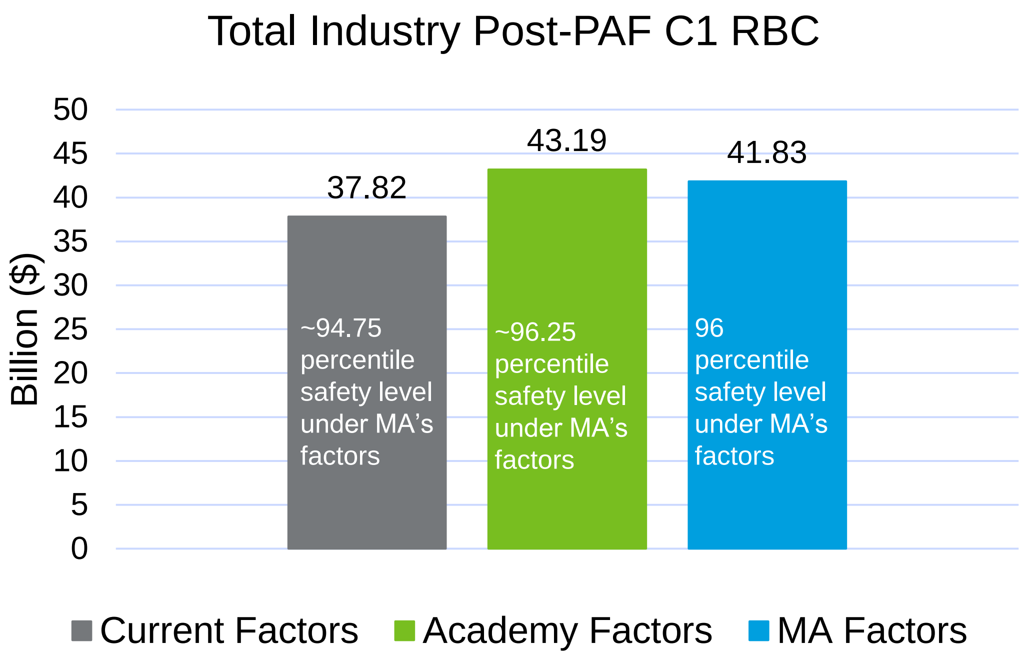
» (3) The economic state PAFs that are overly punitive (lenient) to portfolios with a smaller (larger) relative to that observed empirically

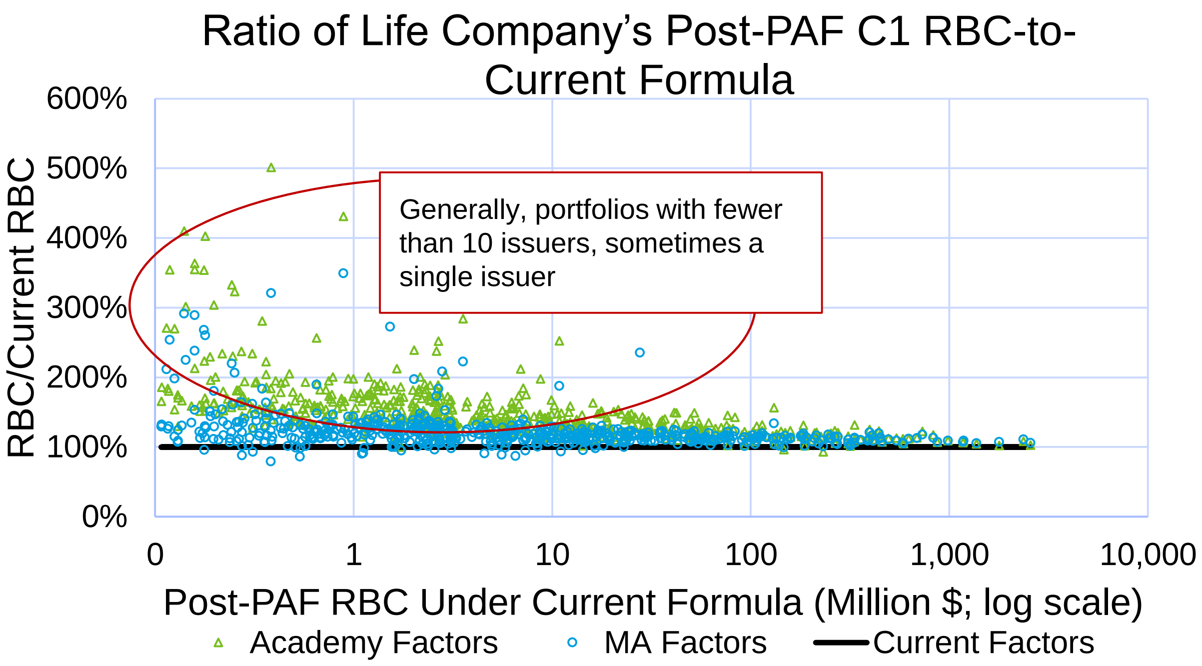
Impact of MA C1 Factors on All Life Companies

Holdings on Schedule D Part 1 excluding government bonds

» Resulting increase in RBC with MA C1 factors is relatively evenly distributed across life companies of different sizes

» Under the Academy's proposal, a disproportionate share of the C1 RBC increase is attributed to small and medium sized life companies, driven largely by the limitations of economic state model described previously





Holdings includes all exposures on Schedule D Part 1 excluding US government bonds.

Attachment 1

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Comparison of bond size adjustment

Current			Academy 3.5.2021 Update			Moody's	
Issuers	Factor		Issuers	Factor		Issuers	Factor
First 50	2.5	Up to	10	7.5		Up to 10	5.87
Next 50	1.3	Next	90	1.75		Next 90	1.54
Next 300	1	Next	100	0.9		Next 100	0.85
Over 400	0.9	Next	300	0.85		Next 300	0.85
		Over	500	0.75		Above 500	0.82