



---

AMERICAN ACADEMY *of* ACTUARIES

---

*Objective. Independent. Effective.*

October 10, 2017

Mr. Kevin Fry  
Chair, Investment Risk-Based Capital Work Group  
National Association of Insurance Commissioners

Re: Updated Recommendation of Corporate Bond Risk-Based Capital (RBC) Factors

Dear Kevin:

This letter provides an updated recommendation for capital requirements for bonds by the American Academy of Actuaries'<sup>1</sup> C1 Work Group (C1WG).

In August 2015, the C1WG recommended risk-based capital factors for corporate bonds. This recommendation, *Model Construction and Development of RBC Factors for Fixed Income Securities for the NAIC's Life Risk-Based Capital Formula*, presented the basic model structure and methodology for the capital factor development and the Investment Risk-Based Capital Work Group subsequently exposed it for comment. The exposure generated numerous comments and questions that the C1WG [responded to](#) in our Oct. 17, 2016, letter to you. In June 2017, the C1WG [updated its recommendation](#) to include both updated base factors and the companion portfolio adjustment for the number of bonds in a portfolio. In this recommendation, the prescribed regulatory statistical safety level for a bond portfolio (i.e., 96<sup>th</sup> percentile over a 10-year time horizon) was met through the combined impact of the base factors and the portfolio adjustments. However, concerns were raised with the approach taken to get to the statistical safety level, and this letter recommends certain revisions to address those concerns.

The prior reports presented to you remain relevant, as the basic model structure and methodology have not changed. However, this letter outlines certain recommended revisions for your consideration, which are summarized as follows:

1. Revise the base factors to satisfy a higher statistical safety level; and
2. Revise the portfolio adjustment to only reflect diversification.

---

<sup>1</sup> The American Academy of Actuaries is a 19,000-member professional association whose mission is to serve the public and the U.S. actuarial profession. For more than 50 years, the Academy has assisted public policymakers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.

## **A. Updated Recommendation for Base Factors and the Portfolio Adjustment for Life RBC**

The base factors recommended in June 2017 were based on an expanded representative portfolio that included 824 bonds designated as NAIC 1 or NAIC 2 to better reflect the average credit risk of a life insurer's bond portfolio. The factors were set at the 92<sup>nd</sup> percentile (i.e., the statistical safety level assumed for the individual base factors since the inception of RBC). Please note that the statistical safety level for bond requirements has only been prescribed at the portfolio level and not for individual securities. The portfolio adjustment was then established to serve two purposes:

1. To reflect appropriate portfolio diversification in an individual insurer's bond portfolio relative to the representative portfolio; and
2. To establish capital requirements for the bond portfolio at the prescribed 96<sup>th</sup> percentile statistical safety level (given the base factors were set at the 92<sup>nd</sup> percentile).

Some observers commented on the counterintuitive results of the portfolio adjustment factors. We agree with these observations and note that the expanded representative portfolio, combined with base factors set at the 92<sup>nd</sup> percentile, created anomalies that were difficult to explain.

The suggestion was made that the portfolio adjustment should not intentionally be used to adjust the statistical safety level of an average portfolio. This suggestion implies that the portfolio adjustment should be neutral or approximately equal to 1.0 for an average portfolio (i.e., a portfolio with the same number of bonds as contained in the representative portfolio.) The updated approach meets that criterion because the exact percentile confidence level of the base factors was selected to reproduce aggregate industry C1 requirements when the base factors are applied to each company portfolio. That said, the confidence level for the base factors is close to the 96<sup>th</sup> percentile for each rating class, and the portfolio adjustment only captures differences in a company's diversification risk relative to the representative portfolio. This recommendation addresses these concerns with updated base factors and companion portfolio adjustments.

Relative to the June 2017 recommendation, this update does not change the average C1 requirement across the industry. We don't expect material differences on the total C1 requirement for most insurers, but we have not tested the results for each company. This expectation is based on the fact that the overall statistical safety level for the capital requirement has not changed from the June 2017 recommendation.

The updated recommendation for the base factors is included in Appendix A. The updated recommendation for the portfolio adjustment is included in Appendix B.

## **B. Alternative Base Factors for Health and P&C**

The C1WG is recommending C1 factors for the life RBC formula. We recognize that there is a desire to update the investment risk factors in all of the RBC formulas for consistency. Because the investment risk is the largest risk for most life insurers, changing the C1 bond factors has a material impact on the RBC ratios for the life industry. However, changing the investment

factors in the health and P&C RBC formulas has a much smaller impact because investment risks as a percentage of the whole are relatively smaller for most Health and P&C companies.

At the request of the IRBC, the C1WG has updated the alternative factors that could be used as the basis for updated bond factors in the health and P&C formulas. These factors, contained in Appendix C, have been developed by adjusting the Life C1 bond factors as follows:

1. Federal taxes are zeroed out to produce pre-tax factors.
2. The provision for credit risk contained in statutory life reserves, as defined by the risk premium, has been zeroed out. Health and P&C statutory reserves contain no provision for credit risk.

All other assumptions remain the same. Note that the bond factors in the current health and P&C RBC formulas contain an adjustment to the bonds reported in NAIC 3-5 categories. These below-investment-grade securities are reported at market value in the health and P&C financial statements, but are reported at amortized cost in the life financial statement. The C1WG was not able to find any documentation of the current adjustment for reporting differences (largely a 50 percent reduction in the P&C and health factors). The adjusted factors contained in Appendix C do not include any adjustment for this reporting difference.

The factors contained in Appendix C are direct model output from the life C1 bond model. We note that the factors for the below investment grades approaching default are large. If these factors are adopted, we suggest capping the factors at 30 percent, consistent with the pre-tax, pre-covariance factor for unaffiliated common stock.

We note that the health RBC formula does not contain the portfolio adjustment. Without the portfolio adjustment, the health RBC base factors produce portfolio coverage above or below the prescribed 96<sup>th</sup> percentile depending on the number of issuers held. The C1WG has no information explaining this apparent inconsistency in this aspect of the health RBC formula compared to the other formulas; however, we suggest the IRBC discuss whether adding a portfolio adjustment to the Health RBC formula has merit.

The C1WG is not recommending these factors for the P&C and health RBC formulas, but has provided these alternative factors as a potential starting point for consideration by regulators to create a more consistent set of updated charges across all RBC formulas.

If you have any questions or would like to further discuss these topics, please contact Ian Trepanier, life policy analyst, at [trepanier@actuary.org](mailto:trepanier@actuary.org), or Nancy Bennett, senior life fellow, at [bennett@actuary.org](mailto:bennett@actuary.org).

Sincerely,

Nancy Bennett, MAAA, FSA, CERA  
Jerry Holman, MAAA, FSA, CFA  
Co-Chairpersons, C1 Work Group  
American Academy of Actuaries

Cc: Julie Garber, NAIC

Appendix A  
**Base C1 Factors for Corporate Bonds for the Life RBC Formula**  
 Before Tax, Direct Model Output

	Current	August 2015	June 2017	Sept 2017
Aaa	0.40%	0.28%	0.22%	0.31%
Aa1	0.40%	0.43%	0.32%	0.43%
Aa2	0.40%	0.63%	0.44%	0.57%
Aa3	0.40%	0.79%	0.56%	0.72%
A1	0.40%	0.96%	0.68%	0.86%
A2	0.40%	1.13%	0.82%	1.06%
A3	0.40%	1.30%	0.98%	1.24%
Baa1	1.30%	1.49%	1.13%	1.42%
Baa2	1.30%	1.68%	1.32%	1.69%
Baa3	1.30%	2.01%	1.57%	2.00%
Ba1	4.60%	3.55%	2.88%	3.75%
Ba2	4.60%	4.39%	3.74%	4.76%
Ba3	4.60%	5.62%	4.89%	6.16%
B1	10.00%	5.99%	5.07%	6.35%
B2	10.00%	7.86%	6.89%	8.54%
B3	10.00%	10.31%	9.45%	11.82%
Caa1	23.00%	14.45%	13.87%	17.31%
Caa2	23.00%	19.85%	19.02%	23.22%
Caa3	23.00%	29.82%	29.06%	34.11%*

\*The factor for Caa3 should be capped at the 30% factor for unaffiliated common stock. Under current RBC scheme, the factor for NAIC 6 bonds in or near default is set equal to the base factor for unaffiliated common stock.

Appendix B  
**Portfolio Adjustment Factors**

Current PA Formula

Recommended PA Formula  
 (September 2017)

	Issuers	Factor		Issuers	Factor
Up to	50	2.50	Up to	10	7.80
Next	50	1.30	Next	90	1.75
Next	300	1.00	Next	100	1.00
Over	400	0.90	Next	300	0.80
			Over	500	0.75

Appendix C  
**Alternative Base C1 Factors for Corporate Bonds**  
 Direct Model Output, No Taxes, No Statutory Reserve Offset

	Current Life at 92nd %ile	Alternative June 2017 at 92nd %ile	Alternative Sep 2017 at 96th%ile
Aaa	0.40%	0.26%	0.34%
Aa1	0.40%	0.43%	0.53%
Aa2	0.40%	0.64%	0.76%
Aa3	0.40%	0.92%	1.05%
A1	0.40%	1.27%	1.41%
A2	0.40%	1.64%	1.84%
A3	0.40%	2.07%	2.29%
Baa1	1.30%	2.56%	2.78%
Baa2	1.30%	3.12%	3.43%
Baa3	1.30%	3.88%	4.21%
Ba1	4.60%	8.66%	9.35%
Ba2	4.60%	11.44%	12.23%
Ba3	4.60%	15.39%	16.41%
B1	10.00%	20.10%	20.96%
B2	10.00%	28.18%	29.29%
B3	10.00%	39.47%	41.07%
Caa1	23.00%	54.63%	57.18%
Caa2	23.00%	69.19%	71.95%
Caa3	23.00%	72.49%	76.90%**

\* The life RBC formula contains a portfolio adjustment factor to capture how an individual insurer's portfolio differs from the representative portfolio due to diversification. The P&C RBC formula uses the life portfolio adjustment, but the health RBC formula does not contain a portfolio adjustment.

\*\* If the reporting adjustment is defined at 50%, the highlighted factors will exceed 30%.

These alternative factors have not been adjusted for any reporting differences between NAIC 3-5 bonds.