

# Property and Casualty Risk-Based Capital Committee Recent Activities

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Discussion of Preliminary Results—For Discussion Only

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# Agenda

1. Background
2. 2022 interest rate increases—need for new present value methodology
3. Investment income offset and adjustment for loss runoff risk horizon (preliminary figures)
4. Safety Level Options (preliminary figures)
5. Year-over-year capping approaches (preliminary figures)

# Background: Importance of R4 and R5

- The committee (“we”, within this presentation) has been working to recalibrate the R4 and R5 components of risk-based capital (RBC) with certain small exceptions (e.g., excessive premium growth charge). These are particularly important for companies with an RBC ratio of 3 or less (see highlighted figures).

		2021 Company Action Level Amounts (\$B)			
		P&C Industry		Cos. w/ RBC Ratio <= 3.0	
RBC Charge		Amount	%	Amount	%
R0	Subsidiary	84.1		2.2	
R1	Asset - Fixed Income	19.5	6%	0.9	6%
R2	Asset - Equity	192.1	59%	1.4	9%
R3	Credit	11.4	4%	1.1	8%
R4	Reserve	145.5	45%	12.8	86%
R5	Premium	81.1	25%	5.0	34%
Rcat	Catastrophe	54.5	17%	1.8	12%
Total		407.6		17.1	
Total ex. R0		323.5	100%	14.9	100%

#### Notes:

Figures in this chart are aggregate company action level amounts for the industry and for companies with an RBC Ratio of 3 or less.

The totals in the last two rows of the chart are before Basic Operational Risk. The totals are less than the sum of the preceding rows because they are the result of the covariance adjustment for each company (i.e., square root of sum of squares).

For the companies with an RBC Ratio of 3 or less, the RBC Ratio for each company is calculated as Authorized Control Level RBC Including Basic Operational Risk divided by Total Adjusted Capital.

# Background: Calculation of Premium Risk and Reserve Risk

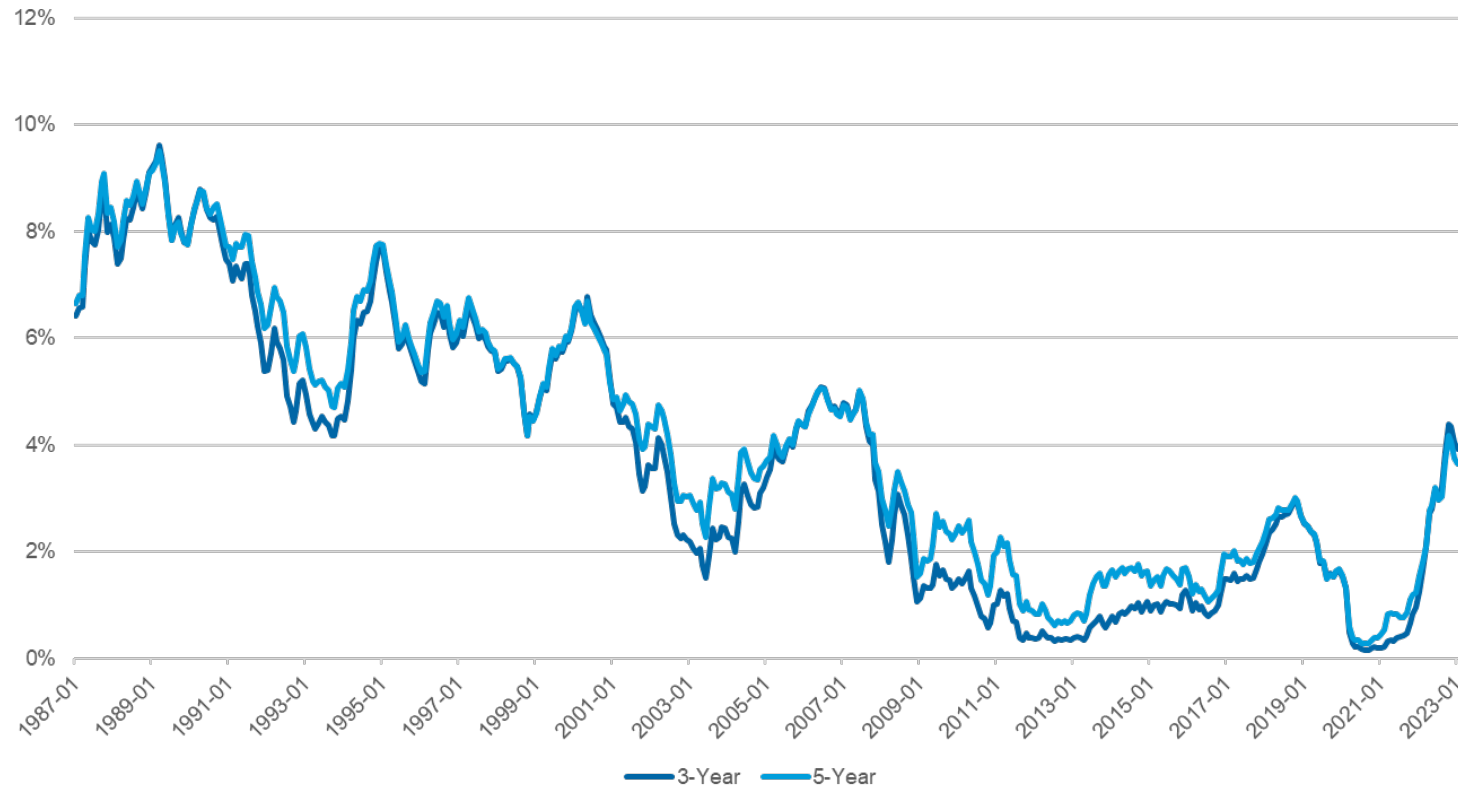
- For each line of business, premium risk and reserve risk are calculated as
  - Basic Risk Factor, excluding Rcat overlap
  - Adjustment for 10-Yr company experience in relation to industry
  - Adjustment for company expenses (premium risk only)
  - Adjustment for investment income (IIA)
  - Adjustment for loss sensitive discount
- Risk charges for each line are summed and a diversification factor is applied to calculate the all-lines risk charge.
- We provided indicated basic risk factors before the adjustment to remove the Rcat overlap to the working group in April 2021.
- We are working on updating the highlighted portions of R4 and R5.

# Background: Investment Income Adjustment (IIA)

- The IIA reduces the risk charge for anticipated investment income earned on losses prior to payout at the risk-free rate. This credit gets applied to both Reserve Risk and Premium Risk.
- Two elements go into the calculation of the IIA
  - Payment patterns—time between when ultimate losses are incurred and losses are paid out.
    - We used industry total paid loss triangles from Schedule P part 2 and RBC filings to calculate payment patterns.
    - Previous methodology was similar to IRS tax methodology and used a single point along the diagonal from Schedule P part 1.
    - Also new is a method to determine loss payouts beyond year ten. Previous method was similar to IRS and generally repeated last payout percent in each subsequent years (up to year 15) until losses were 100% paid.
    - New method exponentially decays unpaid losses (up to year 40). The decay rate gets selected from runoff in development years 8-10. Generally, the decay rate is the losses that get paid in the next development year as a percentage of unpaid losses at the beginning of the year.
  - Interest rates—these have varied extensively across the experience period used to calibrate risk charges (starting in 1987). See next slide.

# Historical Interest Rates

Market Yield on U.S. Treasury Securities at Constant Maturity, Monthly, Not Seasonally Adjusted

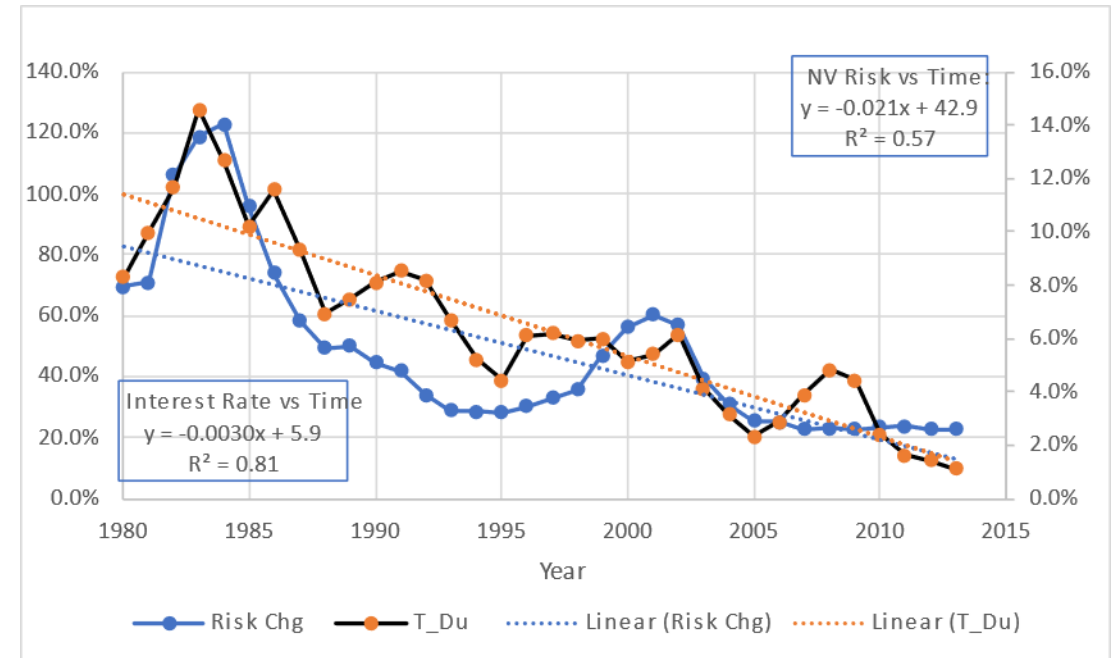
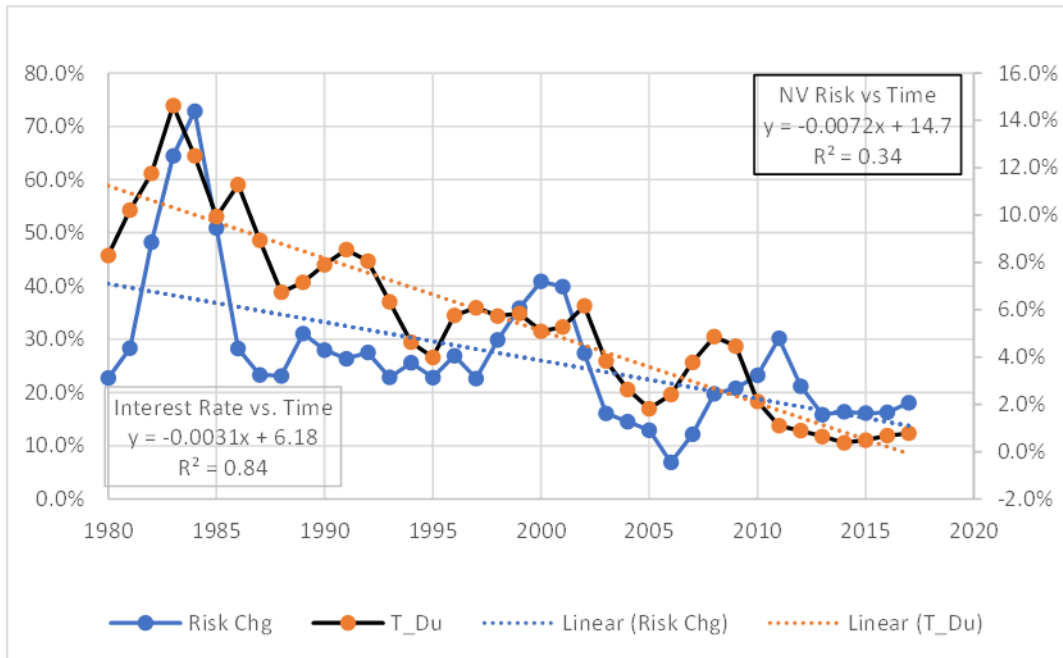


Source: St. Louis Fed

Observation:  
Interest rates have declined from above 8% in the late '80s to below 2% in 2012–17. In the past year, rates increased to about 4%.

# Investment Income Adjustment (IIA)

- Year-by-year variation in nominal risk charges (calculated from Schedule P and RBC data for this analysis) has generally followed the variation in US Treasury rates.



- Hence, we utilize a new method, the present value method, that discounts individual company datapoints in the dataset based on historical interest rates and then chooses the 87.5 percentile.
- This approach produces a more consistent measure of risk because it removes a systematic source of variation in results across the experience period. What remains is a better reflection of true risk inherent in the lines, at present values.
- We will still calculate an investment income adjustment factor for use in the RBC formula. We will essentially divide this factor from the 87.5 percentile discounted datapoint so that the final risk charge is not affected.

# IIA—Risk Horizon for Loss Runoff

- The premium and reserve risk datapoints used in the analysis come from Schedule P or RBC filings, generally at 10 years development.
  - Premium risk factors have a development time horizon of ten years. We generally capture the loss ratio for the most mature accident year at age ten. Hence the development time horizon for premium risk is ten years.
  - Reserve risk factors have a development time horizon of nine years. We generally capture the most mature incurred losses at age ten and calculate the change from the initial reading at age 1. Hence, this reflects a development horizon of nine years.
- Payout patterns run off for up to 40 years. Premium and reserve risk still exist after age 10 and this is not captured in the analysis. Hence, we recommend adjusting the investment income discount to match the risk horizon. Specifically, we do not recommend providing credit for investment income beyond the time horizon period for which risk is captured.
- We accomplish this by adjusting the 87.5th percentile present value risk factors based on how much investment income can be earned in a period limited to 10 or nine years compared to how much can be earned over full runoff of the line of business.
  - We calculated these adjustments factors using current risk-free rates.
  - The adjustments increase with the level of interest rates.



# Impact of Adjustments to Loss Runoff Horizon – Preliminary Figures

LOB	Premium Risk Charge			Reserve Risk Charge		
	Unad-justed	Adjus-ted	% Chg	Unad-justed	Adjus-ted	% Chg
HO	0.213	0.213	0.1%	16.4%	16.6%	0.9%
PPA	0.137	0.138	0.3%	12.8%	13.0%	1.4%
CA	0.201	0.201	0.4%	25.7%	25.9%	0.9%
WC	0.095	0.121	27.5%	1.6%	4.9%	213.2%
CMP	0.173	0.176	1.5%	31.4%	32.6%	3.7%
MPL-O	0.345	0.363	5.2%	8.0%	9.5%	19.0%
MPL-C	0.239	0.244	2.1%	-1.5%	-0.8%	-45.8%
SL	0.200	0.204	1.7%	21.5%	24.0%	11.8%
OL	0.125	0.136	8.5%	27.4%	29.3%	7.0%
SP	0.094	0.095	0.1%	21.3%	21.3%	0.3%
APD	0.054	0.054	0.0%	11.2%	11.2%	-0.1%
Fid/Sur	0.105	0.106	0.9%	43.7%	44.0%	0.7%
Other	0.143	0.143	0.2%	14.6%	14.7%	0.6%
Intl	0.934	0.944	1.0%	81.2%	85.3%	5.1%
Re-Prop	0.396	0.399	0.9%	19.6%	20.5%	4.5%
RE-Liab	0.196	0.231	18.0%	19.9%	26.7%	34.3%
PL	0.266	0.287	8.0%	97.7%	101.5%	3.9%
FG/MG	1.532	1.534	0.1%	-5.1%	-5.0%	-1.9%
Wrnty	0.216	0.216	0.0%	30.2%	30.2%	0.0%

Negative changes are generally increases. Here, the negative risk charge decreases, hence the negative change.



# Development of Reserve Risk Ratio as Risk Horizon Expands from 1 to 9 Years

	87.5 percentile incurred loss change as a percentage of reserves at year 1								
	1 yrs	2 yrs	3 yrs	4 yrs	5 yrs	6 yrs	7 yrs	8 yrs	9 yrs
HO	18.8%	22.2%	23.7%	23.6%	25.2%	25.8%	25.8%	26.1%	26.6%
change		3.5%	1.5%	-0.1%	1.7%	0.6%	0.0%	0.3%	0.5%
WC	15.6%	22.5%	30.4%	34.5%	37.9%	38.2%	45.0%	46.0%	49.1%
change		6.9%	7.9%	4.1%	3.3%	0.4%	6.8%	0.9%	3.1%
Re-Liab	25.3%	43.8%	65.4%	96.5%	110.8%	126.2%	152.6%	171.3%	187.3%
change		18.5%	21.7%	31.0%	14.4%	15.4%	26.4%	18.7%	16.1%

- Ultimate incurred losses at the 87.5th percentile increase as risk horizon increases from one to nine years.
- We conclude risk will continue to increase beyond year nine.
- We apply this conclusion to both reserve and premium risk factors. Both depend on how ultimate incurred losses can change over time.

# Statistical Safety Level in RBC—Preliminary Figures

- Part of the recent analysis we have completed is looking at the impacts of using various safety levels in RBC.
- The indicated company action level risk charges in the report are based on an 87.5th percentile safety level. We seek direction from working group members on what safety level to use.
- Considerations for not changing the safety level:
  - Capital required for a loss development runoff time horizon of nine years is more than that required by some regulatory solvency formulas which utilize a one-year development horizon.
  - Past analysis has shown that larger companies, who cover most policyholders, have lower indicated risk charges than smaller and mid-sized companies, implying a higher safety level for most policyholders.
- Considerations for increasing the safety level
  - 87.5% is lower than the safety level in any other component of the RBC Formula or, to our knowledge, in regulatory capital formulas in other countries (e.g., Rcat=99%, Bond Factors=96%).
  - Risk charges have declined over time, concurrent with interest rates. But there is no reason to expect a continuation of the downward trend in risk.
  - Years prior to 1988, with poor experience, have been excluded from the analysis and deserve some consideration.
  - Captives and runoff companies may now rely on regulatory capital requirements more, making the setting of regulatory capital more important.
- Preliminary impacts of higher safety levels on indicated risk charges (compared to 87.5 percentile)
  - 90th percentile safety level increases premium risk charges about 25%, reserve risk charges about 40%.
  - 95th percentile safety level increases premium risk charges about 110% and reserve risk charges about 180%.

# Minimum Risk Charges/Year-Over-Year Capping Approaches

- We have considered a minimum risk charge of 5%, consistent with the current lowest risk charge.
- We looked at various capping approaches to limit changes in risk charge over one year to +/- 10%, 20%, or 35%, values which the committee has reviewed in the past.
- These risk charges limits are calculated line by line assuming a company with LOB expense ratio equal to the industry expense ratios and assuming no company loss experience adjustment.
- What capping level approach would working group members prefer?

# Academy P&C RBC Next Steps

- Obtain P&C RBC Working Group Feedback
  - On present value methodology
  - On adjustment to match loss runoff horizon to risk horizon
  - On statistical safety level
  - On minimum risk charge and year-over-year capping approaches
- Complete Revised Investment Income Report—Targeting May–June 2023.
- Report to working group on analysis of line of business diversification factors.

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