

# Perspectives

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OUR VIEW ON INSURANCE CAPITAL MANAGEMENT TOPICS

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## The Risk Asset “Smile”: Finding the Sweet Spot for P&C Insurers

Finding the “ideal” amount of risk assets can be challenging, and changing existing allocations may lead to unexpected outcomes.

### EXECUTIVE SUMMARY

Property and Casualty (P&C) insurers primarily invest in high-quality fixed income securities. Risk assets such as below investment grade bonds, equities, and alternatives complement these portfolios, but guidance on optimal proportions is often unclear. The risk asset “smile” analysis is an economic, mark-to-market framework that shows that preferable ranges exist, and warns that too little exposure or risk-asset reductions can increase investment risk and lower return. Interestingly, the P&C industry appears well positioned in the aggregate.

## Every insurer that owns risk assets has a distinct risk asset “smile.”

### RISK ASSETS HELD BY THE U.S. P&C INSURANCE INDUSTRY

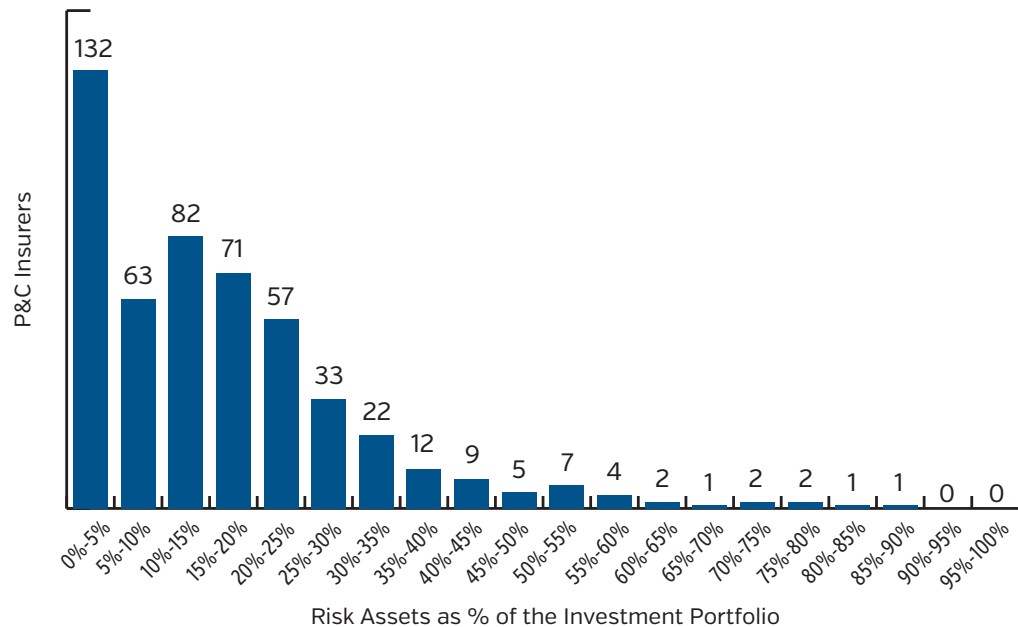
Table 1 summarizes the U.S. P&C industry’s<sup>1</sup> risk asset exposure<sup>2</sup> compared to investment grade bond, cash, and short-term allocations over the past 10 years excluding Berkshire Hathaway. The percentage of risk assets within the industry’s investment portfolio has remained stable with a low of 22.5% in 2018, peaking at 27.2% in 2021, and ending 2023 at 24.2%. Exposures among individual insurance companies vary.

**Table 1. P&C industry broad asset allocations (excluding Berkshire)**

Asset Class/Sector	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
<b>Investment Grade Fixed Income</b>										
Cash/Short-Term/Gov't/Agcy	16.0%	15.3%	13.9%	13.8%	13.8%	13.5%	12.7%	12.4%	12.5%	12.8%
Corporates/Taxable Muni	29.2%	29.2%	27.0%	27.0%	25.9%	25.8%	23.6%	23.8%	24.2%	23.4%
Structured	18.1%	16.8%	16.0%	16.4%	17.4%	16.3%	13.9%	13.2%	13.1%	13.1%
Exempt Muni	8.7%	11.2%	12.4%	14.7%	16.0%	18.9%	21.9%	23.9%	24.4%	23.8%
Other	3.8%	3.7%	3.5%	3.2%	3.0%	3.0%	2.9%	3.0%	2.7%	3.1%
<b>Total</b>	<b>75.8%</b>	<b>76.3%</b>	<b>72.8%</b>	<b>75.0%</b>	<b>76.0%</b>	<b>77.5%</b>	<b>75.0%</b>	<b>76.2%</b>	<b>76.8%</b>	<b>76.2%</b>
<b>Risk Assets</b>										
Below Investment Grade	3.8%	4.0%	4.7%	4.8%	4.5%	4.3%	4.8%	4.7%	4.3%	4.0%
Equities	13.0%	12.2%	15.3%	13.5%	13.1%	12.0%	13.8%	12.7%	12.4%	13.4%
Schedule BA	7.4%	7.6%	7.2%	6.7%	6.3%	6.2%	6.3%	6.4%	6.5%	6.3%
<b>Total</b>	<b>24.2%</b>	<b>23.7%</b>	<b>27.2%</b>	<b>25.0%</b>	<b>24.0%</b>	<b>22.5%</b>	<b>25.0%</b>	<b>23.8%</b>	<b>23.2%</b>	<b>23.8%</b>

Sources: NEAM Analytics, S&P Capital IQ Pro

**Graph 1. Distribution of Risk Asset Shares Held Across the P&C Industry in 2023 (Excl. Berkshire)**



Sources: NEAM Analytics, S&P Capital IQ Pro

Graph 1 illustrates the spread of risk asset shares for the 506 insurance entities in the P&C sector at year-end 2023.<sup>3</sup> The median risk asset allocation is 13.6%.

Reasons for the observed differences are multifold. Size and ownership structure, underwriting strategy, liability profile, and leverage may affect insurers' ability to absorb losses and diversify and mitigate investment risks. Other factors that may influence the appetite and tolerance for risk assets include regulatory and rating agency considerations, target return and capital adequacy, liquidity needs, preferences for diverse types of income, and investment expertise.

## THE RISK ASSET “SMILE”

One solution to identify the appropriate share of risk assets an insurer should hold as part of its investment portfolio is to engage in a strategic asset allocation analysis which is usually conducted in the context of the insurance organization holistically to reflect the above-mentioned underwriting and enterprise-level considerations.<sup>4</sup>

The risk asset “smile” analysis complements this holistic assessment. It evaluates how an investment portfolio's return and risk may change as the share of the existing risk assets increases or decreases with its relative mix preserved.<sup>5</sup> Risk is measured as 99.5% Tail Value-at-Risk [T-VaR] to reflect historical total return patterns and correlations among asset classes and is expressed as a loss to capital [surplus].<sup>6</sup>

**Table 2. Hypothetical Portfolios with Increasing Risk Asset Shares for the P&C Industry (Excl. Berkshire)**

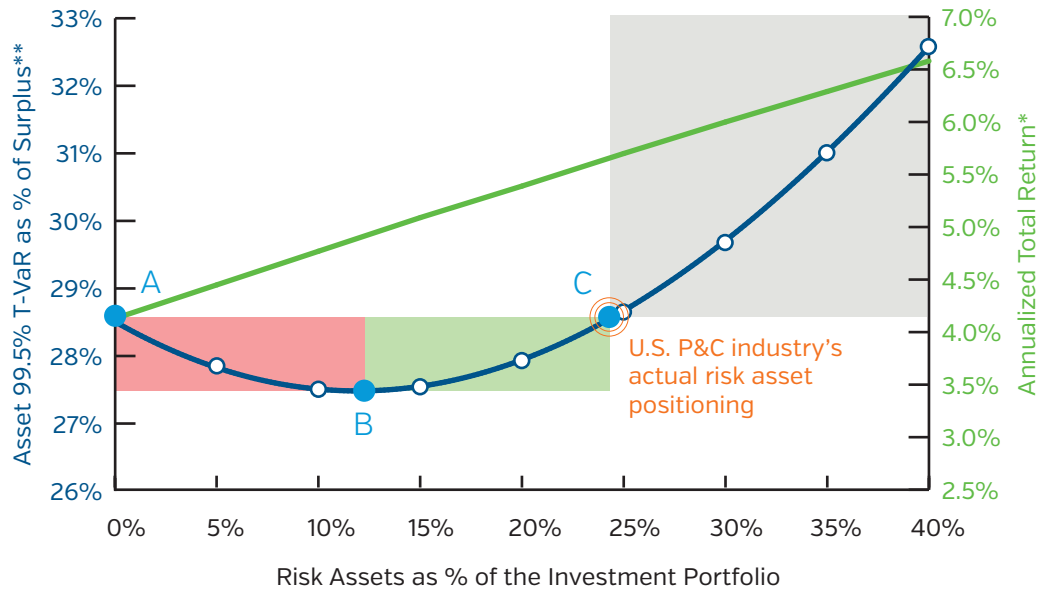
P&C Industry	Hypothetical Portfolio Risk Asset Share										
	Risk Asset Share: 24.2%	0%	5%	10%	15%	20%	25%	30%	35%	40%	
<b>Investment Grade Fixed Income</b>											
Cash/Short-Term/Gov't/Agcy	16.0%	21.1%	20.0%	19.0%	17.9%	16.9%	15.8%	14.8%	13.7%	12.6%	
Corporates/Taxable Muni	29.2%	38.5%	36.6%	34.6%	32.7%	30.8%	28.9%	26.9%	25.0%	23.1%	
Structured	18.1%	23.8%	22.6%	21.5%	20.3%	19.1%	17.9%	16.7%	15.5%	14.3%	
Exempt Muni	8.7%	11.5%	11.0%	10.4%	9.8%	9.2%	8.7%	8.1%	7.5%	6.9%	
Other	3.8%	5.1%	4.8%	4.6%	4.3%	4.1%	3.8%	3.5%	3.3%	3.0%	
<b>Total</b>	<b>75.8%</b>	<b>100%</b>	<b>95.0%</b>	<b>90.0%</b>	<b>85.0%</b>	<b>80.0%</b>	<b>75.0%</b>	<b>70.0%</b>	<b>65.0%</b>	<b>60.0%</b>	
<b>Risk Assets</b>											
Below Investment Grade	3.8%	0.0%	0.8%	1.6%	2.3%	3.1%	3.9%	4.7%	5.5%	6.3%	
Equities	13.0%	0.0%	2.7%	5.4%	8.0%	10.7%	13.4%	16.1%	18.8%	21.4%	
Schedule BA	7.4%	0.0%	1.5%	3.1%	4.6%	6.1%	7.7%	9.2%	10.8%	12.3%	
<b>Total</b>	<b>24.2%</b>	<b>0.0%</b>	<b>5.0%</b>	<b>10.0%</b>	<b>15.0%</b>	<b>20.0%</b>	<b>25.0%</b>	<b>30.0%</b>	<b>35.0%</b>	<b>40.0%</b>	
<b>Risk &amp; Return</b>											
Annualized Total Return [%]*	5.6	4.1	4.5	4.8	5.1	5.4	5.7	6.0	6.3	6.6	
99.5% T-VaR as % of Surplus**	28.5	28.5	27.8	27.5	27.6	27.9	28.7	29.7	31.0	32.5	
<b>Regulatory / Rating Agency Capital Charges as % of Portfolio***</b>											
NAIC RBC	3.8	0.8	1.5	2.1	2.8	3.4	4.1	4.8	5.4	6.1	
AM Best 99.6% BCAR	9.4	1.7	2.6	4.4	6.3	8.2	10.2	12.2	14.1	16.1	

Source: NEAM, AM Best, NAIC, S&P Capital IQ Pro

The starting point of the analysis is a hypothetical portfolio with all existing risk assets removed and their original share proportionally reallocated to the remaining non-risk assets. Next, the original risk asset mix is re-introduced into the portfolio, and its share gradually increased.

Table 2 captures the resulting hypothetical portfolio allocations, returns, and 99.5% T-VaRs along with NAIC RBC and AM Best BCAR investment-related capital charges. The latter two metrics focus on expected loss from default and decrease of equity valuations as alternative measures for portfolio risk. The P&C industry's actual year-end 2023 asset allocation and risk and return metrics are provided in the first column for reference.

**Graph 2. Risk Asset “Smile:” Risk Asset Shares’ Expected Impact on Investment Return and Risk**



Source: NEAM

Graph 2 plots the relationship between the share of risk assets in the portfolio and the resulting hypothetical return and 99.5% T-VaR. The green line illustrates annualized return and reports to the axis on the right. Expected returns increase with the risk asset exposure in the portfolio.

The blue line shows 99.5% T-VaR and resembles a “smile” shape: As the allocation to risk assets increases from Point A onwards, overall portfolio risk diminishes up to Point B. This trough, for the P&C industry at approximately 12.4%, is the precise risk asset share that is estimated to minimize portfolio risk due to its beneficial impact to volatility from diversification. Increasing risk assets past Point B onwards is expected to increase risk, and at an accelerating pace.

Point C highlights an allocation of particular interest as it reflects the amount of risk assets that is expected to generate a significantly higher investment return at a comparable 99.5% T-VaR of a portfolio without any risk assets.

### RANGES OF “OPTIMAL” RISK ASSET SHARES IN THE INVESTMENT PORTFOLIO

Comparing risk and return on the risk asset “smile” delivers insight on ranges of risk asset shares to optimally hold within the investment portfolio. Portfolios with risk asset shares between points B and C (marked by the green-shaded area) are expected to generate higher investment returns (noted by the ascending green line) at similar or lower levels of risk compared to portfolios between points A and B (marked by the red-shaded area). Absent any other considerations or limitations, portfolios with more risk assets in the green-shaded area appear preferable. Risk asset allocations past Point C (marked by the gray area) offer higher returns at higher risks for insurers with suitable risk appetites. These allocations may become increasingly less attractive, however, as risk starts to over-proportionally outweigh incremental return. Coincidentally, the P&C industry achieves the favorable positioning of Point C.

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## IMPLICATIONS FOR INSURERS

Inferring from industry results to an individual insurer may be misleading as the shape of the risk asset “smile” depends heavily on the mix, nature, and profile of risk- and non-risk assets currently owned. As a practical consequence, insurance organizations may want to assess their risk asset positioning on their unique risk asset curve to evaluate if they fall into the “red, green or gray” area. Organizations in the “red” zone need to be mindful that they may not get compensated for the risk they take, and that decreasing risk asset exposures may lead to increased investment risk as diversification benefits exit the portfolio. Insurers in the “green,” and particularly the “gray” area, should confirm that asset allocations align with the enterprises’ nuanced goals, risk preferences and idiosyncrasies.

While the risk asset “smile” suggests ideal target ranges for risk assets in the “green” area, there rarely is a “free lunch” in practice. Risk asset-induced surplus volatility following [statutory] accounting rules, and regulatory and rating agency concerns among other factors and limitations, may change the criteria for optimality and outweigh pure mark-to-market or economic considerations.

## KEY TAKEAWAYS

Insurance companies typically invest a portion of their portfolio in risk assets, yet determining the right amount may not be straightforward. The risk asset “smile” provides insight by evaluating how adjustments to current risk asset allocations influence investment risk and return. It implies that ranges of preferable allocations exist and proposes that increasing risk asset exposures may enhance risk-adjusted investment returns. The P&C industry, for example, achieves greater returns at a comparable level of investment risk as if no risk assets were held whatsoever.

Key findings from the risk-asset “smile” analysis framework include:

- In an economic, mark-to-market framework, every insurer that owns risk assets has a distinct risk asset “smile” linked to the mix, nature, and profile of risk- and non-risk assets in its investment portfolio. While returns are expected to increase with risk assets, the impact to investment risk depends on the organization’s current position on its risk asset “smile” curve.
- Decreasing the existing risk asset share in a portfolio may actually increase investment risk, which is counter intuitive and, therefore, a potentially critical takeaway for key decision makers. Conversely, increasing risk asset exposures may decrease investment risk due to added diversification.
- “Optimal” risk asset exposures capitalize on diversification that lowers overall portfolio risk; however, it is crucial to confirm risk asset allocation targets through a holistic evaluation of an insurance company’s entire circumstance typically provided by strategic asset allocation frameworks.

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## ENDNOTES

<sup>1</sup> NEAM defines the year-end 2023 U.S. P&C industry as comprised of 507 top-tier (re-)insurance entities with statutory invested assets exceeding \$50 million and net written premiums exceeding \$10 million, excluding financial guarantors. Berkshire Hathaway is excluded from industry totals throughout this publication due to its outsized, industry-moving schedule BA and equity holdings.

<sup>2</sup> We exclude affiliated common and preferred stock holdings as we do not consider them part of an insurer's traditional investment portfolio for the purpose of this analysis.

<sup>3</sup> Out of the 132 insurers that owned up to 5% in risk assets, 48 did not own any at year-end 2023.

<sup>4</sup> Refer to NEAM's Perspectives series: "Layering Enterprise Risk Preferences & Rewards" from January 2023 for added context and information.

<sup>5</sup> For example, as the existing risk asset share is increased, the non-risk asset share is reduced proportionally across all investments such that relative weights of sectors and asset classes within risk assets and non-risk assets stay the same.

<sup>6</sup> Annualized total returns reflect observable dynamics from 12/31/1997 onwards as if the portfolio had been held constant through time. 99.5% T-VaR measures the largest unrealized portfolio loss to expect in any given year with a 0.5% likelihood, the equivalence to a 1-in-200-year event outcome.

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## DISCLOSURES

\* Annualized Return analysis generates hypothetical estimates of unrealized gains or losses (i.e., total return) for the hypothetical portfolios. This analysis maps the U.S. P&C Industry's year-end 2023 investment holdings (excl. Berkshire Hathaway) to corresponding indices (i.e. ICE BofA Global Index System) based on security characteristics such as sector, credit, duration, currency and country. Indices are weighted proportionally to the corresponding holdings' statutory carrying values in the portfolio. NEAM's database of historically observable total returns for these indices, which reflect income and price changes, are then used to estimate how a portfolio will perform. The estimates shown are for illustrative purposes only, do not represent the results of actual trading and should not be used for performance measurement or attribution. Taxes, fees, or cost of portfolio rebalancing is explicitly not modeled or reflected. Past results are not indicative of future performance. Results may vary with each use of this tool and over time. Readers will experience different results from any information shown, including the chance for up to a 100% loss of any investment. NEAM makes no representations and warranties as to the reasonableness or completeness of any of the assumptions used in this analysis.

\*\* The 99.5% T-VaR as % of Surplus analysis generates hypothetical estimates of portfolio Tail Value-at-Risk (T-VaR). VaR is the statistical estimate for the marked-to-market portfolio loss not to be exceeded within one year at a given confidence level. T-VaR is the statistical estimate for the expected amount of loss given the VaR loss limit is exceeded. Here, T-VaR is expressed as percent of the P&C Industry's year-end 2023 Surplus (excl. Berkshire Hathaway). The analysis maps holdings of the hypothetical portfolios to corresponding indices (i.e. ICE BofA Global Index System) based on security characteristics such as sector, credit, duration, currency and country. Indices are weighted proportionally to the corresponding holdings' statutory carrying values in the portfolio and resulting weightings are held constant. NEAM's database of historically observable total and excess returns for these indices, which reflect income and price changes, are then used to estimate VaR and T-VaR. The impact from taxes or cost of portfolio rebalancing is explicitly not modeled or reflected. Any securities not included in the analysis might have a material impact on the VaR/T-VaR estimates. This analysis provides VaR/T-VaR and risk factor estimates based on certain assumptions. NEAM makes no representations and warranties as to the reasonableness or completeness of these assumptions. Past performance results are not necessarily indicative of future performance. The reader will experience different results from any information shown. Results may vary with each use of this tool and over time. There specifically is a chance for up to a 100% loss of any investment, portfolio or asset class modeled. Estimates shown are for illustrative purposes only and should not be used for performance or performance attribution purposes.

\*\*\* Regulatory / Rating Agency Capital Charges estimate regulatory and rating agency ("regimes") required capital for investment portfolios to help assess the perceived 'riskiness' of investments from a regulatory and rating agency perspective, including NAIC's Risk-Based Capital (RBC) and AM Best's Best Capital Adequacy Ratio (BCAR) frameworks. NEAM adheres to the regimes' published capital adequacy frameworks, formulas and criteria which are publicly available. Regulators and Rating agencies generally provide a formulaic approach to assign individual investment holdings with a 'capital charge' factor based on information such as credit quality, sector, maturity, currency, and country. NEAM attempts to identify the appropriate factor for each holding and then applies the ascribed factor to an investment holding's statutory carrying value for RBC and BCAR. While NEAM strives to reflect regimes' investment risk assessments holistically, certain regime-specific risk factors may not, or only be partially reflected in the analysis provided. Individual insurance entities' actual regulatory/rating agency model results will deviate from the estimates provided. The figures are provided for informational purposes only and not intended for evaluating or making investment decisions, or to be used in lieu of actual regulatory/rating agency risk assessments. Results shown were achieved by the application of certain assumptions. NEAM does not make any representations or warranties as to the reasonableness and completeness of these assumptions or any outcomes. Changes to these assumptions may materially change results. The reader would experience actual results that differ from the estimates shown. Results may vary with each use of this tool and over time.



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