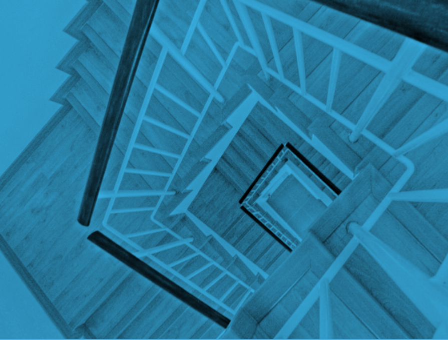

NEAM VANTAGE POINT

Perspectives

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OUR VIEW ON INSURANCE CAPITAL MANAGEMENT TOPICS

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NEAM New England Asset Management

Exploring the Relevance of Asset Liability Duration Matching in P&C Companies: Myth or Must?

Asset Liability Management (ALM) is essential for life insurers to mitigate long-term risks. This paper examines the application of ALM strategies in Property and Casualty (P&C) insurers, who contend with shorter-term liabilities and possess distinctly different enterprise profiles.

INTRODUCTION

The collapse of Silicon Valley Bank in 2023 served as a wake-up call for the banking industry, highlighting the critical importance of asset liability management (ALM). Banks may need to liquidate assets to meet customers' cash flow needs, sometimes realizing losses at inopportune times. This focus on ALM is not unique to banking; it is also a cornerstone of risk management in the insurance industry. Life insurance companies, in particular, employ ALM approaches to manage risk. Their investment portfolios need to be "liability-driven" due to the unique nature of their life insurance and annuity products.

When it comes to Property and Casualty (P&C) insurance companies, the benefits of incorporating asset liability duration matching in constructing asset portfolios are less clear. Unlike life insurance companies, P&C insurers deal with shorter-term and more unpredictable liabilities, such as claims from natural disasters or bodily injury, potentially leading them to perhaps think about ALM differently. This paper will first outline the various ALM approaches used by life insurance companies. We will then examine the enterprise, fixed income, and liability profiles of P&C companies based on the latest public statutory statements.

ALM FOR LIFE INSURERS

ALM is crucial for life insurers to ensure they can meet their long-term obligations to policyholders. Insurers collect premiums and pay out benefits as claims arise, with the timing and severity of claims adding complexity. For life insurance and annuity products, premiums can be invested over long periods before disbursement. Because of this extended investment horizon, insurers must consider liability characteristics like guaranteed interest payments credited to policyholders, or the undesired timing or size of policy surrenders. Therefore, the investment portfolio must address the liquidity risk, reinvestment risk, and optionality due to interest rates and policyholder behavior.

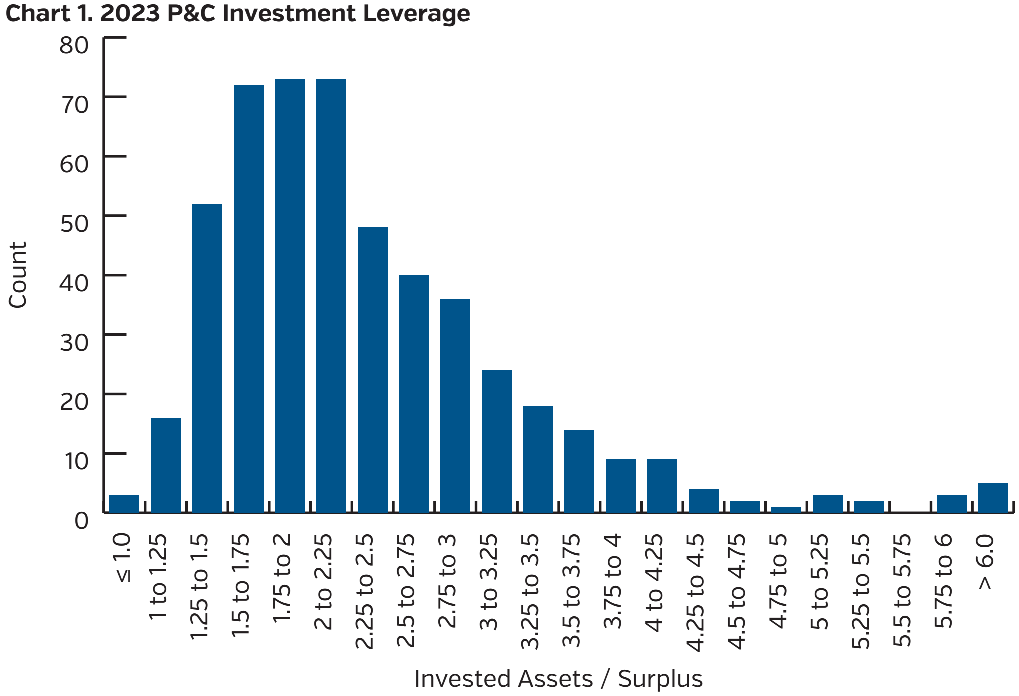
Life insurance companies employ various ALM strategies to ensure they can meet their long-term obligations to policyholders. These strategies are designed to align the investment portfolio with the expected liability cash flows, thereby mitigating risks associated with interest rate fluctuations and market value changes. Depending on the specific liability mix of a life insurer, different ALM strategies may be more appropriate. For instance, insurers with more predictable and stable liabilities might favor cash flow matching, while those with more uncertain liabilities might opt for duration or dollar duration matching. Below are some of the typical ALM practices used by life insurance companies:

- **Cash Flow Matching:** Structure the investment portfolio with predictable fixed income assets to match expected liability cash flows.
- **Duration Matching:** Align the duration of the fixed income portfolio with that of the liability cash flows to mitigate market value movements due to interest rate changes.
- **Dollar Duration Matching:** Match the dollar duration of assets to that of liabilities to address significant differences in their market values.

P&C COMPANY'S ENTERPRISE PROFILE

With this background on ALM practices in the life insurance industry, we now turn our attention to the P&C insurance sector. To understand the relevance and application of ALM in the P&C industry, it is essential to first examine the balance sheet profile of U.S. P&C companies,[1] particularly their investment leverage. Based on U.S. statutory accounting, Chart 1 shows that most P&C companies have investment leverage ratios (invested assets divided by surplus) between 1.5 and 3.0, with an average of 2.2. This contrasts sharply with the much higher investment leverage of 10.4[2] seen in the life insurance industry.

Chart 1. 2023 P&C Investment Leverage



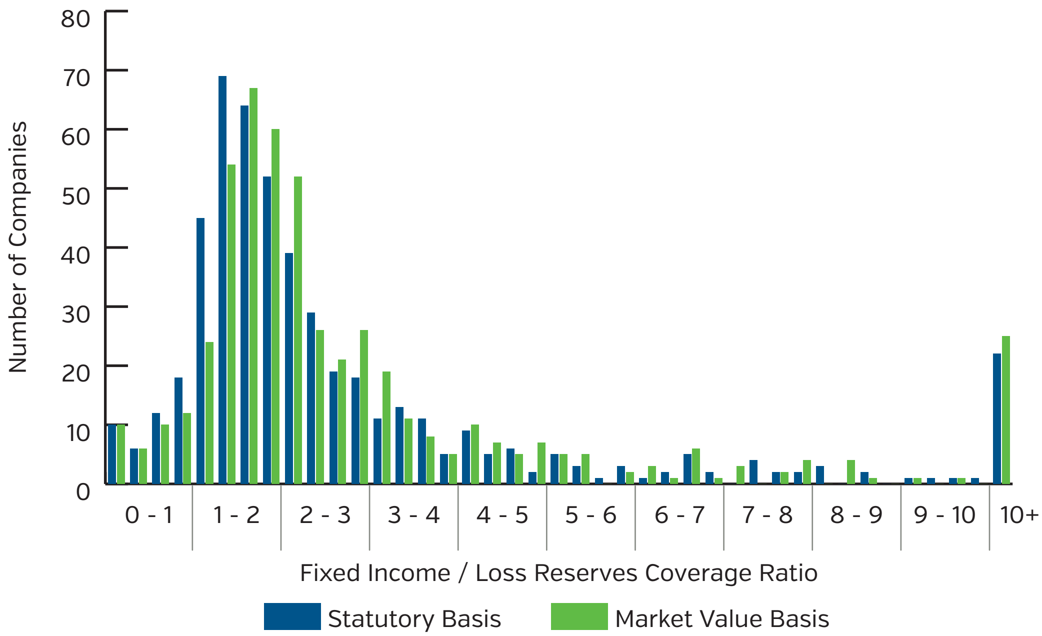
Source: NEAM and S&P Global Market Intelligence

“ASSETS” VERSUS “LIABILITIES” WITHIN THE ALM CONTEXT

When it comes to ALM, the assets considered typically encompass only fixed income securities. For the U.S. P&C industry, Chart 2 compares the statutory reported value of fixed income assets with the reported undiscounted carried reserves in blue. The chart shows that for most P&C companies (429 companies, or 84.6% of the universe), fixed income assets exceed 120% of their undiscounted reserves. In aggregate, the P&C industry had $1,237bn of fixed income assets versus $892bn of undiscounted reserves as of year-end 2023.

Moreover, the assets and liabilities within the ALM context are typically measured on a market value or economic value basis. To follow a consistent ALM approach, we use the “market yield” of each P&C company’s fixed income portfolio to estimate the fair value or market value of the company’s loss reserves. Essentially, we use the same discount rate[3] to value both the fixed income assets and loss reserves. This is illustrated in green in Chart 2, where the “coverage” ratios (assets over reserves) are even higher when measured under the market value basis. This suggests that P&C companies have an additional buffer in their fixed income portfolios to cover potential claims or liabilities.

Chart 2. 2023 Distribution of Fixed Income / Loss Reserves



Source: NEAM and S&P Global Market Intelligence

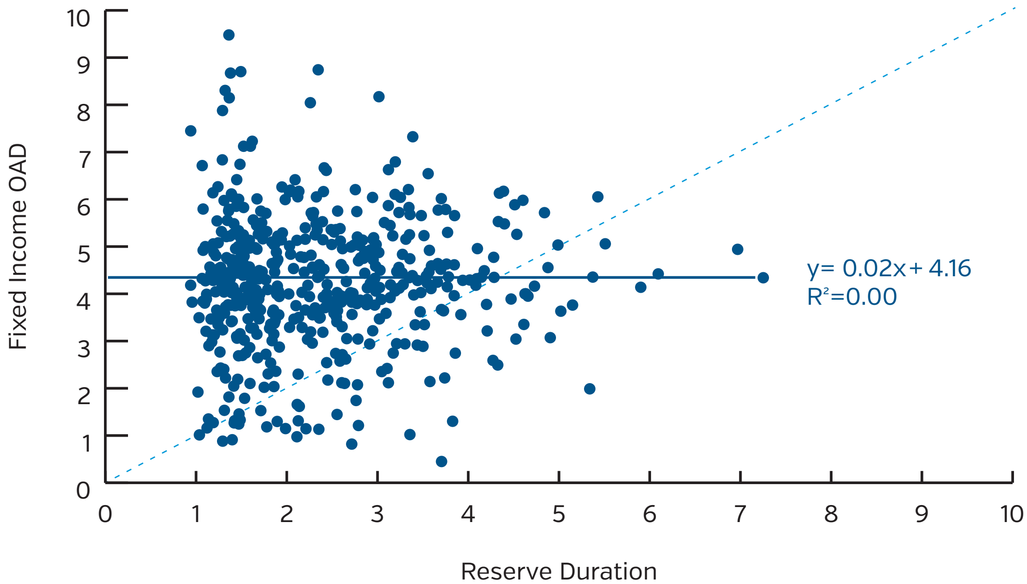
WHAT ABOUT DURATION?

As part of the present value calculations, we can estimate the reserve duration[4] and compare it with the duration of fixed income for each P&C company. Chart 3 illustrates the corresponding reserve duration versus fixed income duration for each company. Here are two interesting observations:

1. There is limited or no correlation (R-squared nearly zero) between the reserve duration and the fixed income option-adjusted duration (OAD).

2. Fixed income duration is relatively longer than the reserve duration.

Chart 3. 2023 Fixed Income OAD vs. Reserve Duration All Lines

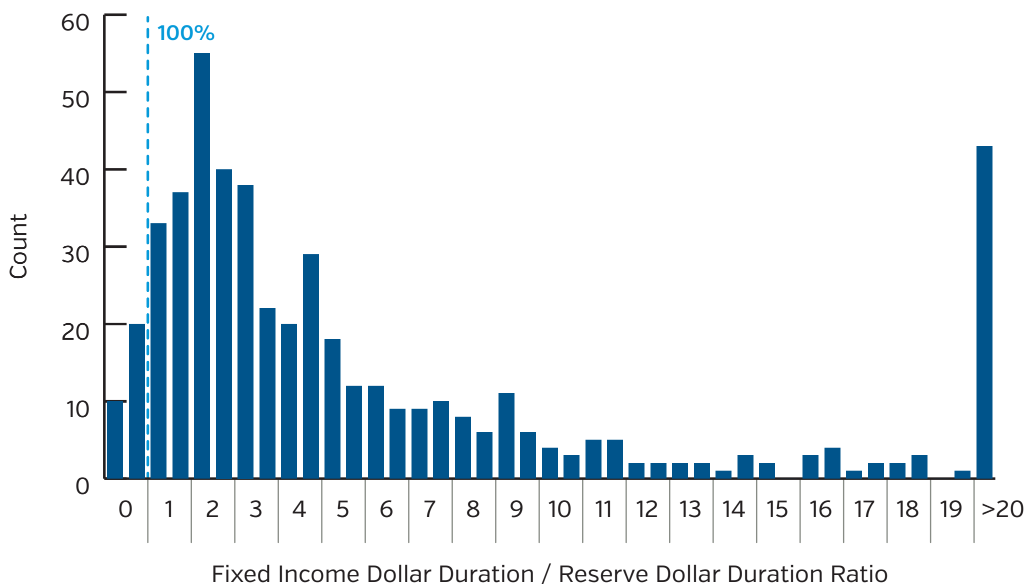


Source: NEAM and S&P Global Market Intelligence

DOLLAR DURATION: LET'S REFLECT ON THE DOLLAR IMPACT

As mentioned earlier, when assets are materially different from liabilities, the dollar impact or dollar duration must be incorporated into the ALM analysis. For each P&C company, we calculate the dollar duration for both fixed income assets and reserves. A goal of ALM is for companies to manage the dollar duration of their fixed income portfolio to be close to the dollar duration of their reserves. Chart 4 shows the distribution of the relative asset versus reserve dollar durations for the P&C industry, with a median of 3.8x. Given that asset duration is much longer than reserve duration, and the market value of fixed income assets is relatively larger than the value of discounted reserves, it is unsurprising that the dollar duration of fixed income assets is much higher than that of reserves. From Chart 4, only 5% (25 companies out of 507 companies) in the P&C industry have a ratio between 80% and 120%, which is the typical range for companies that follow dollar duration matching.

Chart 4. 2023 Dollar Duration: Fixed Income / Reserves

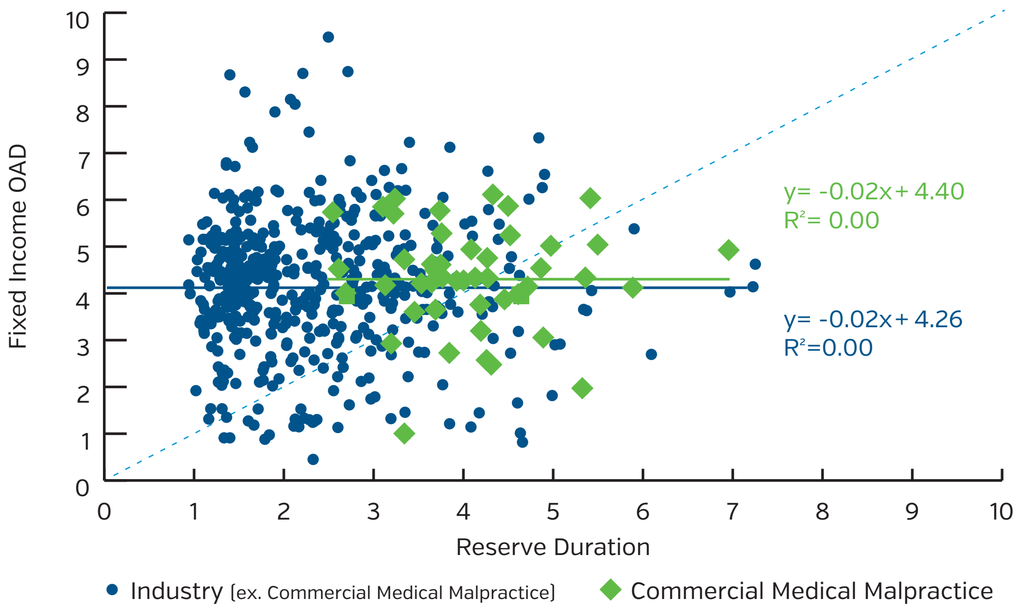


Source: NEAM and S&P Global Market Intelligence

HOW ABOUT THE LONG-DATED LIABILITY WRITERS? (COMMERCIAL MEDICAL MALPRACTICE WRITERS)

In our analysis of U.S. P&C companies, we examined the reserve durations of commercial medical malpractice writers. Among the 507 P&C companies included in our analysis, we identified 49 medical malpractice writers with relatively longer reserve durations. Chart 5 illustrates that these 49 companies have an average reserve duration of about 4 years, compared to the P&C industry average of 2.2 years. Despite the longer reserve durations, there does not appear to be a clear correlation between reserve duration and fixed income OAD, similar to the rest of the P&C industry.

Chart 5. 2023 Fixed Income OAD vs. Reserve Duration Commercial Medical Malpractice vs. Industry



Source: NEAM and S&P Global Market Intelligence

KEY TAKEAWAYS

ALM is critical for life insurance companies due to their high investment leverage and liability-driven investment strategy. We applied a similar analysis to the U.S. P&C industry to understand their ALM practices. By examining the statutory financial statements of U.S. P&C companies and estimating their discounted reserves using the market yield from their fixed income portfolios, we derived the following key takeaways:

- The P&C industry has an average investment leverage of about 2.2, with most companies ranging from 1.5 to 3.0. This is relatively lower than the investment leverage of 10.4 observed in the life insurance industry.
- P&C companies' fixed income portfolio asset values are significantly larger than their reserves, both on a statutory undiscounted and mark-to-market economic basis.
- The fixed income portfolio duration of the P&C industry is generally longer than the reserve duration, with little correlation between the two.
- Under a typical ALM dollar duration framework, the fixed income dollar duration of the P&C industry is significantly larger than the dollar duration of liabilities, with a median of 3.8x across companies.

ENDNOTES

[1] 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 $50mn and net written premiums exceeding $10mn, excluding financial guarantors. Berkshire Hathaway is excluded from industry totals throughout this publication due to its outsized, industry-moving schedule BA and equity holdings.

[2] As of 12/31/2023, the life industry had total cash and investments of $5,348bn and capital and surplus of $507bn, with an investment leverage of 10.4.

[3] Certain accounting rules would require a haircut to the market value of the assets to account for default losses, and similarly, a deduction from the market yield in the discount rate to reflect default losses in liability discounting.

[4] Reserve duration is estimated by discounting the liability cash flows with slight parallel interest rate shifts to evaluate the present value sensitivity to small interest rate changes.

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