

Corporate Pension LDI Issues

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In a recent survey by Coalition Greenwich (CG) they pointed out how the much higher funded ratios (FR) for corporate DB plans have caused plan sponsors to change their goal from maximizing returns versus liabilities to maintaining high funded ratios and lower FR volatility. CG points out the Milliman 100 Pension Funding Index where the average corporate plan had a funded ratio of 103% as of September 2023 versus 88% at December 2020. CG reports that this dramatic shift marks the start of a new phase for corporate plan sponsors and how they manage LDI strategies. They are now re-evaluating their current LDI managers and several new issues:

- Inadequate hedging of liabilities due to off-benchmark exposures
- Asset allocation based on achieving a Return on Assets (ROA)
- Excessive overlap of holdings by LDI managers
- Insufficient downside protection
- LDI Benchmarks

Pension Objective

*Ryan ALM, Inc. believes that the pension objective is to fund and **secure** benefits in a cost-efficient manner with prudent risk.*

There are only two strategies that secure benefits:

- Insurance Buy-Out Annuities (Pension Risk Transfer)
- Cash Flow Matching (CFM)

Inadequate Hedging

Asset liability management (ALM) is all about cash flows. We prefer this term to LDI since it encompasses the management of liabilities too. The issue and focus is will the asset cash flows fully fund the liability cash flows... with certainty and on time? It is critical that the assets know what they are funding = **Monthly Net liabilities = (Benefits + Expenses) - (Contributions)**. Unfortunately, this is not calculated by the actuary.

Timely and certain full funding is best accomplished through cash flow matching (CFM)... not duration matching (DM). Only CFM can provide the accuracy and cost effectiveness to properly hedge liability cash flows. Duration matching has several fundamental issues that is best explained in our detailed research in the Ph.d. Frank Fabozzi [Handbook of Fixed Income](#). The biggest issue with DM is that it does not fund liability cash flows timely or with certainty.



LDI Benchmark

As mentioned earlier, net monthly liability cash flows is not calculated by the actuary. This calculation is best accomplished through a **Custom Liability Index (CLI)**. As a solution, the Ryan team created the first CLI in 1991 and it has become one of the major products of Ryan ALM. The CLI provides all the calculations needed for successful ALM (liability cash flows, ASC 715 discount rates, average duration, growth rate, and interest rate sensitivity). Once the CLI is in place then and only then can you hedge the target liability cash flows. **The CLI is the proper benchmark for any LDI strategy.**

The liabilities of a pension are like snowflakes, you will never find two alike... different labor force, salaries, mortality, plan amendments. Only a CLI could calculate all the data needed for successful asset liability management (ALM). Assets need to know what they are funding... monthly net liabilities. The CLI is based on the proprietary actuarial projections of each client. Monthly net liabilities are not calculated by the actuary... the CLI will calculate. No generic market index could ever represent the unique and personal liabilities of a corporate DB plan. Any weightings of generic market indexes to create a so-called custom index is totally inaccurate and inappropriate... a bowl of spaghetti. Without a CLI, ALM can be easily misdirected as to the liability cash flows it needs to fund.

Asset Allocation (Liquidity vs. Growth Assets)

Ryan ALM has presented much research over the years on the benefits of bifurcating asset allocation into liquidity and growth assets. If the true objective of every pension is to fund and secure benefits in a cost-efficient manner, then... **cash flow matching (CFM) should be the core portfolio or liquidity assets** because only CFM (or a Buy-Out annuity) can secure the benefits. CFM is more cost effective than a Buy-Out annuity since it does not require an upfront premium (@3-4%) nor is it based on pricing liabilities at a discount rate = Treasury 10-year which creates a higher present value of liabilities. Since Retired Lives are the more certain and more important liabilities (most imminent and paid to long tenured employees), they should be given the greatest certainty of full funding. We recommend that plan sponsors know what it would cost to fully fund Retired Lives as the first cut of asset allocation. With today's much higher rates and with contributions included the allocation to CFM to fully fund net Retired Lives may be much less than anyone thinks. So, what is the proper allocation to CFM?

At a minimum, plan sponsors should fully fund the next 10 years of net Retired Lives. It has been our experience that using CFM to fully fund the next 10 years of net Retired Lives liabilities could be executed on less than 20% of assets. This would **buy time for the growth assets (Alpha assets) to grow unencumbered**. Historical S&P 500 data suggests that 47% of the S&P 500 index returns come from dividends and the reinvestment of dividends over 10-year rolling periods since 1940. So why would you want to do a *Cash Sweep* as many pension funds do and take away the income (dividends) from growth assets (stocks)?

Asset Allocation (ROA)

The Return on Asset (ROA) assumption traditionally dictates asset allocation. It is based on the ROA for each asset class weighted to produce an average ROA for total assets. This average ROA now becomes the hurdle rate or target return for total assets. Such an exercise usually ignores the funded



status. A logical person would think that if plan A has a 60% funded ratio and plan B has a 90% funded ratio, we would have two very different asset allocations. Ideally, the 90% plan would need a much lower ROA to reach full funding. But that is not the case usually. Quite often, the ROA for pensions is similar which results in similar asset allocations. What is needed and should be a FASB regulation is a **test of solvency that proves current assets can fully fund net liabilities = (benefits + expenses) - (contributions)**. GASB accounting rules (not FASB) require a test of solvency that is based on net liabilities as shown in the formula above. This requires an asset exhaustion test where current assets are grown at the ROA to see if they fully fund the net liabilities every year going forward. The issue with GASB is that is not a calculated ROA. We go into great detail on the benefits of a calculated ROA in our [recent research](#). GASB allows the pension to use the average ROA from an asset allocation model for this solvency test. Whereas a 7.50% ROA might fully fund the two plans above, plan B might only need a 4.73% ROA to accomplish full funding of net liabilities. The ROA needs to be calculated to provide the accurate ROA for full funding.

Solution: Asset Exhaustion Test (AET)

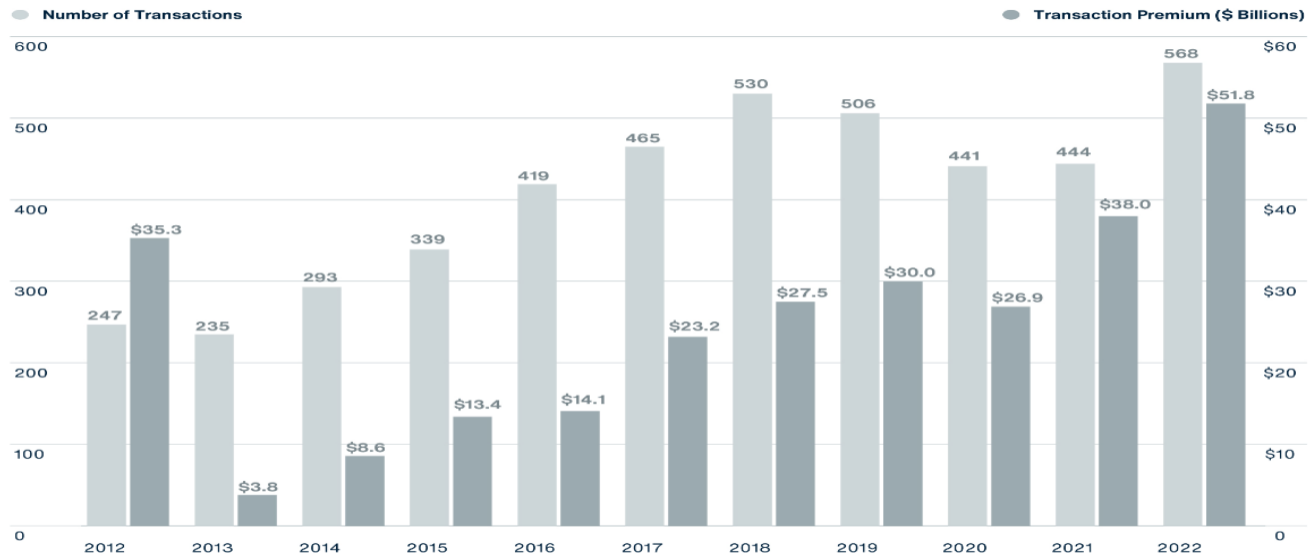
Asset allocation needs to know the *calculated* ROA that will fully fund the residual net liabilities (Active Lives + Terminated Vested) left after CFM has fully funded net Retired Lives. This is best calculated through a modified asset exhaustion test (AET). The Ryan ALM model uses a matrix of asset growth rates to determine the precise target ROA that will fully fund the net residual liabilities. If this calculated ROA is too high, then we will reduce the allocation to CFM or liquidity assets until we reach an acceptable calculated ROA for growth assets to achieve. This iterative process will best determine the allocation between liquidity and growth assets while calculating the target ROA that will fully fund residual net liabilities. It has been our experience that the calculated ROA is always lower than the ROA being used... sometimes much lower.

Pension Expense (PE)

PE affects net income, so it is a major concern of corporate executives. Although there are several factors involved in this calculation, the key one is asset growth in \$ versus liability growth in \$. The Ryan ALM CFM model is skewed to A/BBB+ corporates which will outyield ASC 715 discount rates (AA corporates) by a significant yield spread (50 – 100 bps). This extra yield becomes the margin of victory versus the same term structure (duration) of liability cash flows. As a result, CFM should create liability Alpha and create pension income which should enhance earnings. Should we mention that it provides a buffer should there be an unfortunate default?

Pension Risk Transfer (PRT)

An unfortunate corporate or private pension trend is to get rid of their defined benefit plans by freezing them and then executing a pension risk transfer (PRT). They offered 401k plans as a replacement which lack the certainty of defined benefit payments. The table below developed by Aon shows the massive PRT growth in \$ billions in the last 10 years. This is a sad chapter in the history of pensions. Now that pension expense has been corrected and reversed into pension income thanks to much higher rates, there is less economic incentive to execute a PRT.



Cash Flow Matching (CFM) versus Duration Matching (DM)

Duration matching has several issues that is best explained in our research in the previously mentioned Fabozzi Handbook of Fixed Income. The biggest issue with DM is that it does not fund liability cash flows timely or with certainty. The Ryan ALM CFM model has many benefits including:

Funding Cost Savings (CFM vs. FV of liabilities)

CFM can reduce funding costs by about 2% per year ... 20% over 10 years.

Funding/securing benefits (net Liabilities)

CFM provides the certainty of future cash flows that will fully fund monthly net liabilities.

Enhancing probability of earning the ROA

CFM should outyield current bond allocation + liabilities (if discount rate is below A corporate rates) since it is a portfolio skewed to A/BBB+ corporate bonds.

Reducing Funded Status volatility

CFM matches the term structure/duration of liabilities thereby mitigating funded status volatility.

Mitigating interest rate risk

Liabilities are future value projections which are not interest rate sensitive. CFM matches and funds the liabilities FV thereby mitigating interest rate risk.

Reducing Pension Expense

CFM should outyield liabilities (if discount rate > A corporates) which will create Alpha and outgrow liabilities thereby reducing pension expense.

Hedging pension inflation

Pension inflation is unique to each plan sponsor and is included in the actuarial projections. The only way to hedge pension inflation is to CFM the actuarial projections.

Buying Time

CFM should be the core portfolio to fully fund net liabilities chronologically. This eliminates the need to do a Cash Sweep of growth assets. CFM buys time for the growth assets to grow unencumbered.

Low Fees

The Ryan ALM fee for CFM is low by industry standards and negotiable for large accounts.

Below is a sample CFM client where we are funding net liabilities over 30 years. The funding cost savings is 50.32% or \$328,389,940 (difference between the FV of liabilities and the CFM cost to fund FV) as of 9/30/23.

	LBP Summary		
	ASC 715	LBP Model	Cost Savings (\$ and %) *
Future Value	\$652,599,365	\$652,599,365	
Present Value	\$333,423,063	\$324,209,425	\$328,389,940 50.32%
YTM	5.59%	6.05%	
Discount Rate	5.83%	6.14%	
MDuration	9.15	8.74	
LBP Model Efficiency		100.00%	
Total Assets		\$324,211,856	

Below is a different and larger plan where we are funding the next 10 years chronologically of net liabilities. The funding cost savings is 23.51% or \$196,254,374 as of 9/30/23.

	LBP Summary		
	ASC 715	LBP Model	Cost Savings (\$ and %) *
Future Value	\$834,797,115	\$834,797,115	
Present Value	\$642,094,053	\$638,542,741	\$196,254,374 23.51%
YTM	5.53%	5.79%	
Discount Rate	5.70%	5.83%	
MDuration	4.26	4.17	
LBP Model Efficiency		100.01%	
Total Assets		\$638,602,975	

“Given the wrong index benchmark... you will get the wrong risk/reward”
Confucius