

Pension Solution: Calculated ROA

The Return on Asset (ROA) assumption 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 versus plan B with 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 quite similar resulting in similar asset allocations. What is needed and should be a FASB and GASB regulation is a **calculated ROA that fully funds net liabilities (benefits + expenses) - (contributions)**. GASB requires a test of solvency that is based on net liabilities as shown in the formula above. The issue with GASB is that is not a calculated ROA. 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.

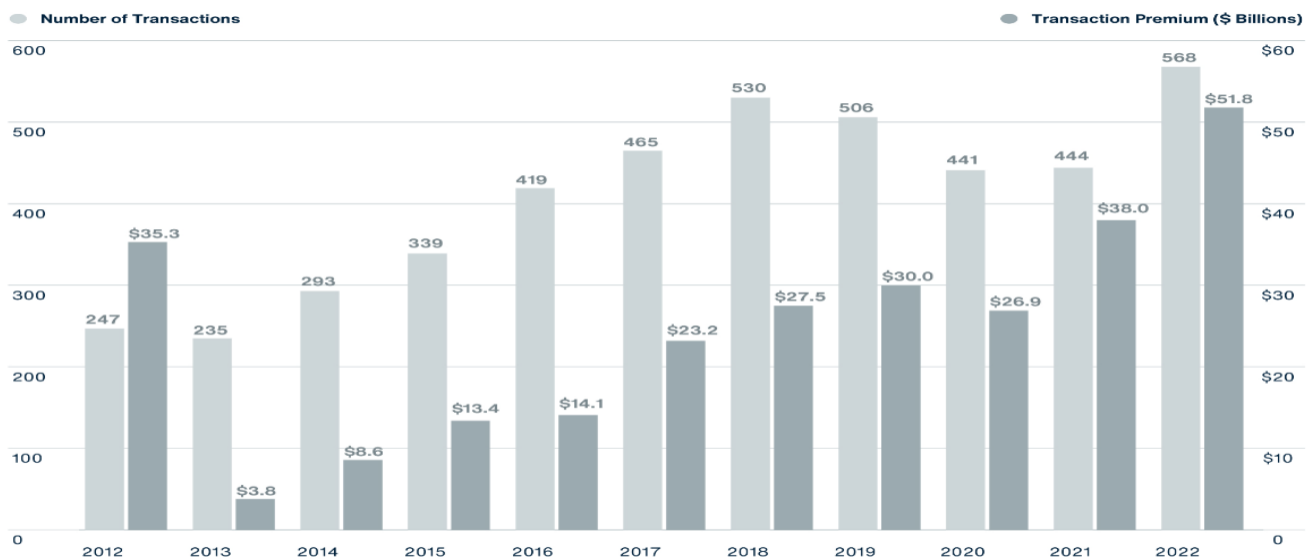
Contributions

A mysterious calculation is the funded ratio (assets/liabilities) and the corresponding funded status (assets - liabilities). The conventional practice is to omit contributions and administrative expenses. Contributions are omitted because they are seen as future assets. Well, aren't actuarial projections of benefits future liabilities? Administrative expenses are left out of the funded ratio/status calculation as well since they are not viewed as liabilities. Yet the GASB regulation includes both contributions and administrative expenses for their required test of solvency. We congratulate GASB for their foresight and thinking here. We believe all pensions should be required to perform a test of solvency. Contributions tend to be large, especially for public plans. They are the first source to fund liabilities (Benefits + Expenses). As a result, current assets fund the residual **net liabilities (B+E) - C**. In many public pension plans contributions are as high as 25% to 40% of projected benefit payments. That should reduce the ROA needed for current assets to fund the residual or net liabilities since you are starting off 25% to 40% funded.

Accordingly, the ROA used as the hurdle rate can be too high and onerous. This would force pensions into too large an allocation to risky assets. The equity correction of 2000-02 was a clear example of this problem. Most pensions were fully funded and had surpluses by 1999 without factoring in contributions, which were low then. Because bond yields were below the ROA, pensions heavily skewed their asset allocation to equities to earn the ROA (@8.0%). In those two and a half years the S&P 500 lost about 60% in total return while liabilities grew at either the ROA rate (GASB) or even higher when marked to the market (FASB) because of declining interest rates. This resulted in a steep decline in the funded status to a serious deficit position causing a spike in contributions.

This extra contribution cost is the pension crisis I featured in my 2013 book "**The US Pension Crisis**". Most public pensions have never recovered and have faced a continuation of

higher contributions ever since. This has wrecked municipal budgets sending some to bankruptcy court including; Detroit, MI; Vallejo, CA; Stockton, CA; San Bernardino, CA; Jefferson County, AL; Boise County, ID; Harrisburg, PA and Washington Park, IL among others. 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.



Liquidity vs. Growth Assets

Ryan ALM has presented much research over the years on the benefits of bifurcating assets into liquidity and growth. 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.** Only CFM or a Buy-Out annuity can secure the benefits. CFM is more cost effective since it does not require an upfront premium (@3-4%) 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 liabilities and important (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?

Solution: Asset Exhaustion Test (AET)

Next is to **calculate** the ROA needed to fully fund the residual net liabilities (Active Lives + Terminated Vested) left after CFM has fully funded net Retired Lives. This is best calculated through an asset exhaustion test (AET). The Ryan ALM model will use a matrix of asset growth rates to determine the precise target ROA that will fully fund the residual net liability. 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.

At a minimum, plan sponsors should fully fund the next 7 to 10 years of net Retired Lives. It has been our experience that using CFM to fully fund the next 10 years of net liabilities could be executed on less than 15% 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)?

Solution: Cash Flow Matching (CFM)

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. If CFM is funding 20 years of net Retired Lives it could reduce funding costs by 40%. If 10 years, then 20% funding cost savings.

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 our 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		

“This is one of those cases in which the imagination is baffled by the facts”
Adam Smith