Pension Asset Allocation
(Strategic vs. Tactical vs. Responsive)

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The asset allocation decision is the single most important asset decision since it affects all assets and the funded status of a plan. *Strategic* asset allocation (AA) takes a long- term view and establishes weights for each asset class in order to achieve the highest probability of earning the target return on assets (ROA). These weights tend to be static and not responsive to the funded status. *Tactical* AA is a short-term view that changes the strategic weights temporarily due to a market opportunity or correction it is trying to take advantage of or avoid. *Responsive* AA is when AA responds to the ever- changing funded ratio and funded status. **Since the true objective of a pension is to secure benefits (liabilities) in a cost-efficient manner with reduced risk over time… then responsive AA is the more appropriate methodology.**

It should be obvious that a 60% and a 90% funded plan should have two very different asset allocations. But if they have the same or similar ROA (likely) they will have the same or similar strategic or tactical asset allocations. Focusing on the ROA has misled most pensions down a return objective path instead of a liability objective direction. This ROA focused road has been a roller coaster of volatile funded ratios and spiking contribution costs. Had pension asset allocations been *responsive* to their surplus funded status of the 1990s by adopting an immunization strategy (cash flow matching liabilities) they would have secured the promised benefits + kept a surplus cushion to protect against any actuarial noise. They would have prevented the pension crisis in America we have witnessed since 1999.

Responsive AA requires accurate and current knowledge of the true economic funded status. This is difficult due to actuarial practices. Actuaries have a tough job to perform the many calculations needed for an actuarial report. As a result, the actuarial report tends to come out annually months after the fiscal year end. Due to actuarial rules, these reports use actuarial valuations to calculate the funded ratio and funded status instead of economic (market) valuations. The asset side does not function well on actuarial valuations. Even the Society of Actuaries proclaimed in a 2004 research report titled "Understanding the Principles

of Asset Liability Management" that the asset side can only function on economic objectives and recommended that pensions create a set of ***economic books*** that compare assets to liabilities on a market (economic) valuation basis frequently.

Custom Liability Index (CLI)

The solution to the actuarial valuation and delinquent information is a Custom Liability Index (CLI). In 1991, Ron Ryan and his team invented the first CLI as the best representation of the true client objective. Although funding liabilities is the true objective of any pension, liabilities tend to be missing in action in asset allocation, asset management and performance measurement. The reason for this disconnect is the absence of a Custom Liability Index (CLI) that best represents the present value, term structure and risk/reward behavior of liabilities. Once a CLI is installed as the proper **benchmark**, then and only then can the asset side function effectively on asset allocation, asset management and performance measurement.

Liabilities are like snowflakes… you will never find two alike. Pension liabilities are unique to each plan sponsor since they each have a different labor force with a different salary structure, mortality and plan amendments than any other pension. As a result, only a *Custom Liability Index* could ever properly represent or measure the unique liabilities of any pension. A CLI should be calculated accurately and frequently so the plan sponsor and its pension consultant can be informed with timely data that can support the asset allocation decision. Assets need to know what they are funding. The economic truth is… assets fund the **net liabilities after contributions** (and maybe income). A CLI should provide both a gross and net liability valuation based on all discount rates that apply (ASC 715, ROA, ROA bifurcated with 20-year munis, Treasury STRIPS, PPA spot rates, PPA 3-segment). But the CLI must have the economic valuation (U.S. Treasury STRIPS) as one of the discount rates to compare actuarial and accounting valuation vs. economic valuation. Moreover, the CLI will provide a quarterly calculation of the economic present value of liabilities so the funded ratio and funded status can be updated… as well as a quarterly calculation of the economic liability growth rate so performance measurement of total assets vs. total liabilities can be assessed.

Since current assets fund net liabilities after contributions, current assets need to know the projected benefits and contributions for every year as far out as the actuary calculates benefits. Noticeably, contributions usually play no role in the asset allocation strategy of most pensions. Given the size of contributions today, it is critical that contributions are a major consideration in the asset allocation strategy. For many plan sponsors, the contribution cost has risen as much as 5x to 10x from the fiscal 1999 level.

Asset Allocation

Asset allocation is the single most important asset decision since it controls the risk/reward behavior of 100% of the pension assets. Since it will greatly affect the funded ratio and

funded status, the success or failure of the asset allocation strategy may be the single most important pension decision. The asset allocation decision and strategy should be based on the funded ratio (present value of assets/liabilities) and funded status (present value of assets – liabilities). Logically, a large deficit status should have a more aggressive asset allocation strategy than a pension with a surplus status. Unfortunately, the funded ratio tends to play little or no role in the asset allocation strategy. Most often the asset allocation focus is on achieving the return on asset (ROA) assumption… an **absolute return target**. History has proven that achieving the ROA does not mean you have achieved a fully funded plan or even enhanced the Funded Status such that the $ deficit and contributions have been reduced.

This is due to actuarial practices in the way contributions are calculated. Any $ deficit is amortized over some long period of time (20 – 30 years or the average life of liabilities) as the first part of the contribution calculation. Next, the actuary grows the current assets market value and the actuarial present value of liabilities at the same growth rate (ROA). This means that **actuarial practices have no input for asset growth to exceed liability growth… unrealistic.** Moreover, how could liabilities that behave like bonds (that is how you defease them) have the same growth rate as assets when the asset allocation models are skewed to risky assets? What results is… any $ deficit grows at the ROA resulting in higher and higher projected contribution costs. Simple math can prove this assertion as shown in exhibit 1 where pension assets achieved the ROA growth target of 8% consistently for 6 years. Liabilities are assumed to have the same 8% growth rate (discount rate). As a result, the funded ratio stays stable at 60% but the funded status $ deficit ***increases by 46.9%*** which would increase contribution costs accordingly. In order for contribution costs to remain stable (although high), assets would have to outgrow liabilities by 5.33% annually (13.33% ROA). In order for contributions to be reduced, asset growth would have to outperform liability growth by over 5.33% annually. Such actuarial calculations are unrealistic and unhealthy for a prudent plan:

Exhibit 1
Funded Ratio = 60% ($40 Deficit)
Assets and Liabilities grow at ROA = 8%

	Assets		Liabilities		Funded Status/Ratio	
Year	Begin	End	Begin	End	$ Deficit	Funded Ratio
1	$60.00	$64.80	$100.00	$108.00	$43.20	60%
2	64.80	69.98	108.00	116.64	46.66	60%
3	69.98	75.58	116.64	125.97	50.39	60%
4	75.58	81.63	125.97	136.05	54.42	60%
5	81.63	88.16	136.05	146.93	58.77	60%
6	88.16	95.21	146.93	158.65	63.44	60%

Requires ROA = 13.33% to *not* increase Contribution costs
Asset growth > Liability growth by 5.33% = Level Contributions

Since the **true objective of a pension is to secure benefits in a cost-efficient manner with reduced risk over time**, asset allocation needs to be in harmony with this objective. As a result, asset allocation should separate assets into liability Beta assets and liability Alpha assets. The ***liability Beta assets*** are to **secure benefits** by ***cash flow matching*** liabilities through a structured bond portfolio (e.g. defeasance or dedication). This should be the ***core portfolio*** of the pension plan. The ***liability Alpha assets*** job is to **outgrow liabilities** to enhance the funded status such that contribution costs are reduced over the life of the pension. In order for contributions to be reduced, pension assets must outgrow pension liabilities. In sharp contrast to this AA objective, pensions have been hard hit with both *volatility* and *spiking* contribution costs that has plagued so much of pension America since 1999. Asset allocation needs to be refocused and responsive to the true economic funded status. Only with a CLI can the plan know its true economic funded status on a routine quarterly basis. With the synergy of liability Beta and Alpha assets, AA now has the proper structure to achieve the true pension objective. Based on the economic funded status should determine the allocation between these two asset groups.

The pension return objective is for assets to outgrow liabilities in economic dollars not actuarial dollars… it is ***relative returns*** that count not an absolute return (ROA). If we use market (economic) values for liabilities, they become highly interest rate sensitive… the economic truth. Using Treasuries as a proxy for liabilities, a small increase in interest rates (+60 bp per year) would create ***negative growth*** in liabilities! Accordingly, any positive growth in assets would enhance the economic funded ratio and funded status. In just five years a 60% funded ratio could be 88% funded with just 5% asset growth and a 70% funded ratio would be 104% funded… **and at no time did assets earn the ROA!**

5-year Horizon

Liabilities (Treasuries) = Discount rate goes from 3.00% to 6.00%

Liabilities Growth Rate = (3.04%)

	----- Annual Growth Rate -----		
Assets	**5.00%**	**6.00%**	**7.00%**
Liabilities	**- 3.04%**	**-3.04%**	**- 3.04%**
Alpha (Annual)	**8.04%**	**9.04%**	**10.04%**
Funded Ratio = 60% …	**87.8%**	**92.1%**	**96.4%**
= 70% ...	**104.3%**	**109.4%**	**111.4%**

For most pensions, the term *liability Alpha* is a new concept. With a liability objective, Alpha needs to be redefined as the excess asset growth (return) above liability growth (return). In order to calculate **liability Alpha** requires a CLI. Given a funded status deficit, an

annual liability Alpha target can be calculated which would erase the deficit over the average life of the plan (duration). The funded ratio deficit divided by the duration of liabilities divided by the funded ratio estimates the annual target liability Alpha needed to reach a fully funded position over a time horizon equal to the duration of liabilities. For example, a 70% funded ratio with a 10-year duration would suggest that the annual target liability Alpha is 4.29% ((30/10) / 70). If economic asset growth exceeds economic liability growth by 4.29% on average for 10 years, the plan should reach a fully funded status. Such liability Alpha is never a certainty and is sure to be a volatile calculation. As a result, the calculation of the target liability Alpha needs to be updated as part of the *responsive* asset allocation process. If the net funded ratio improves to 80% in our above example, the annual target liability Alpha improves to 2.50% annually which should adjust the responsive asset allocation strategy accordingly. **Asset allocation models need to focus on enhancing the funded status by achieving the annual target liability Alpha… not an absolute return target (ROA).**

As a result, asset allocation needs to be ***responsive*** to this ever-changing net funded ratio. ***Tactical*** or ***dynamic*** asset allocation does not respond to the funded status. A responsive asset allocation responds to the funded status through a process called ***Portable Alpha***. If the liability Alpha assets exceed their liability Alpha target return, a prudent AA discipline and strategy is to transfer (port) this excess return over to the liability Beta assets. This will secure more benefits and reduce more volatility on the funded status. Just like the wise gambler in Las Vegas… take your winnings off the table to reduce your risk of losing! Had a portable Alpha strategy been in vogue in the 1990s there would have secured benefits and the surplus position by porting assets over to the liability Beta side. But asset allocation chased the ROA and played a risky game (let it ride) and they lost big…. losing their surplus position and running deep deficits which resulted in spiking contribution costs. The old math principle of: if you lose 50% you need to win by 100% to get back to zero… became the moral of this story. Asset allocation needs to recognize and respond to the funded status. A Portable Alpha strategy does this as a procedure or discipline thereby protecting and governing the plan, so it doesn't become too risky or chase the wrong objective (ROA).

Performance Measurement

In harmony with the true pension objective, assets need to be measured vs. the risk/reward behavior of the CLI. This should be the acid test of asset allocation. **Total asset growth must outperform total liability growth for the funded ratio and funded status to be enhanced**. Without a CLI, such a measurement would be difficult and certainly not timely. Total asset growth should be measured and monitored vs. total liability growth at each investment review meeting. However, liability growth and the current funded status are usually MIA. The CLI will correct this error of omission. A simple warning is applicable here:

If you outperform the S&P 500 but lose to liability growth… the client loses!

Obviously, there is no victory or liability Alpha earned if asset growth underperforms liability growth although traditional performance measurements vs. generic market indexes could suggest otherwise. All liability Beta and Alpha assets need to be in sync with the true objective of enhancing the funded ratio, the funded status and reducing contribution costs.

Conclusion

Traditional asset allocation models and strategies were focused on achieving the ROA assumption. This is not the true or proper objective. Until a Custom Liability Index (CLI) is installed as the proper pension benchmark, asset allocation will be disconnected to the true liability objective. Contributions should be a major consideration in the asset allocation process since they are a large future asset. Contributions are the first source to pay the current liabilities due each year thereby reducing the liabilities current assets need to fund. This ***net economic liability*** needs to be calculated and monitored by the CLI on a frequent basis. Since full funding is the goal, asset allocation needs to know the annual liability Alpha needed to reach this funding status. The CLI will provide such information to calculate the annual target liability Alpha. A Portable Alpha strategy will then rebalance the asset allocation accordingly by taking winnings (excess returns over the target liability Alpha) and porting them over to the liability Beta assets. Performance measurement will then monitor total asset growth vs. total liability growth to verify that the pension plan is on the proper road to full funding.

Ronald J. Ryan, CFA: Awards and Recognition

William F. Sharpe Index Lifetime Achievement Award and ETF Product of the Year Award

Lifetime Achievement Award

Bernstein Fabozzi/Jacobs Levy Award Research Paper of the Year

Most Innovative ETF of the Year Award