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Pension Solution: No Alpha in bonds but ... lots of Beta

William F. Sharpe
Lifetime Achievement Award

Money Management Letter
Lifetime Achievement Award

Capital Link
Most Innovative ETF Award

IMN
ETF of the Year Award

Bernstein Fabozzi/Jacobs Levy
Research Paper of the Year Award



The primary pension objective is to *secure* promised benefits (Retired Lives) in a cost-effective manner (stable to lower contribution costs) with prudent risk. The secondary objective is to enhance the benefits by enhancing the asset allocation. They are both liability objectives but with two different asset strategies. Before I start, I should create certain definitions of the terms I will be using in this paper.

Liabilities = benefits to be paid (Retired Lives)

Alpha = excess return above the liability growth rate

Beta = asset cash flows that match the benefits to be paid

Secure Benefits (Beta assets)

Benefits are future value numbers. As a result, in order to manage assets vs. benefits would require knowing the future value of assets. There are basically only two ways to manage assets vs. future value benefits and to *secure* these benefits:

1. **Insurance Buyout Annuities (IBA)**
2. **Defeasement (through *cash flow matching*)**

Insurance Buyout Annuities (IBA)

IBA guarantee future benefit payments of Retired Lives and remove this liability off balance sheets (risk transfer) but are extremely expensive. Corporations are purchasing IBAs to get rid of the high and rising PBGC premiums caused by the MAP 21 (Moving Ahead for Progress in the 21st century) legislation of July 6, 2012. Since public pensions do not have the PBGC and multiemployer plans have very limited PBGC benefits, the IBA is certainly not appropriate and/or affordable for these pension plan sponsors. However, Corporations would be wise to

do a cost analysis of the IBA versus a cash flow match defeasement. The typical IBA prices Retired Lives (liabilities) at a discount rate of Treasury STRIPS plus a 5% premium. According to our calculations, a **defeasance strategy (cash flow matching) using investment grade corporates would provide a cost savings of about 25% versus IBA.**

Cash Flow Matching (Beta assets)

A low cost and low risk way to secure benefits is to *cash flow match* these future value benefit payments (Retired Lives). In the 1960s thru the early 1980s dedication strategies (cash flow matching) with corporate bonds were common and in vogue for pensions. This strategy became less common as pension consultants and accounting rules focused on present values (Funded Ratio and Funded Status) not future values. This led to great confusion as to how to calculate the present value of liabilities (discount rates) ... and even assets (i.e. smoothing). In truth, ***cash flow matching the liability benefit payment schedule (liability cash flow) at low cost is the ideal way to de-risk a pension plan.*** Ryan ALM spent two years building a liability cash flow matching product, we named and trademarked as the **Liability Beta Portfolio™ (LBP)**. Our LBP is a *cost optimization model* that cash flow matches and funds the liability benefit payment schedule at the lowest cost given the investment policy restrictions of our clients. Bond math suggests that the longer the maturity and the higher the yield... the lower the cost. Our LBP runs several iterations to achieve low cost by skewing the weights to longer maturities and higher yielding bonds within the liability benefit payment schedule we are funding (i.e. 1-10 years Retired Lives).

The **Liability Beta Portfolio™ (LBP)** provides funding cost savings of **@10% to 15% vs. Retired Lives projected cash flows, @20% vs. Treasury STRIPS and @ 25% vs. IBA!** This is a serious cost reduction and should be a major consideration of any de-risking strategy. Yes, the LBP model has some credit risk but very small since we are using investment grade bonds with credit filters (i.e. no bonds on negative watch lists and several solvency tests) plus the cost savings provides a large value-added cushion.

Based on the allocation to bonds + cash should determine how much of the liabilities we can cash flow match (i.e. 15% bond + cash allocation might fund the next seven to 10-years of Net Retired Lives). ***We recommend funding at least the next 10 years of Retired Lives on a net liability basis*** (after contributions) to give time for the performance assets (Alpha assets) to perform. Note that contributions are the first source to fund liabilities such

that current assets fund the *net* liabilities not the gross liabilities. Our LBP model will calculate with precision the cost to fund liabilities (gross or net) in a cost-effective manner ***chronologically***. Since liabilities are funded initially by contributions, using the LBP model to cash flow match net liabilities *chronologically* may be able to fund more liabilities than you think. Assume that a 15% bond + cash allocation could match the next 10 years of net Retired Lives benefit payments chronologically. Based on the Ryan ALM Liability Beta Portfolio™ (LBP) model we show a cost savings of about 10% to 15% on cash flow matching the first 10 years of net liabilities (projected benefit payment schedule – projected contributions).

Matching liabilities chronologically should also buy time for the non-bond assets (Alpha assets) to perform and outgrow Active Lives liabilities (earn Alpha). Given time (10 years) most non-bond asset classes tend to outperform bonds. Since liabilities behave like bonds there is a high probability that non-bond asset classes could outperform liability growth (earn Alpha) over an extended time horizon especially at today's low yield on bonds and liabilities. This would enhance the funded status allowing for reduced contribution costs or increased benefits or both. Our LBP has numerous benefits that best achieve the true pension objective:

Secures Benefits

Cash flow matches + funds monthly Retired Lives benefits chronologically

Reduces Costs

LBP reduces Contribution, Funding and Asset Management Costs

(LBP Fee = 15 bps... 25% to 50% less than most active bond managers)

Reduces Volatility

Reduces volatility of Contributions and Funded Ratio

Reduces Risk

Risk = Uncertainty of Funding Benefit Payments (LBP funds benefits with certainty)

Projected Benefit Payments are Future Values (FV have No Interest Rate Sensitive)

Enhances ROA

LBP should *outyield* most active management bond portfolios

Buys Time

Liability *Beta* Portfolio Matches & Funds Liabilities *Chronologically*

Moves deficit out longer extending the investment horizon

Buys Time for Non-bond assets (Alpha assets) to grow

No dilution of Alpha asserts to fund benefits

Enhancing Asset Allocation (Alpha assets)

With the Liability Beta Portfolio™ in place as the *core portfolio* to match and fund the shorter Retired Lives net liabilities (1-10 years recommended), the Alpha assets are now free to grow without being diluted or unencumbered to pay any benefits. Returns will be volatile, but the Liability Beta Portfolio™ bought time (10 years) for the Alpha assets to grow. Unfortunately, current asset allocations usually require an index benchmark for each asset class including bonds. In the case of bonds, the old Lehman now Bloomberg Barclay's Aggregate (which I designed as Head of Lehman's Fixed Income Research) is too often the benchmark. But no matter what generic bond index is chosen; the fixed income assets can **not** produce enough cash flows to fund benefits if managed vs. generic bond indexes. Bonds will require help from performance assets to fund benefits. This will create dilution and disruption of the growth rate of such performance assets. The example below shows the cash flow difference of bonds managed to a generic index versus cash flow matching to liabilities:

It's All about Cash Flows!

Net Benefits = \$20 million per year

Bond + Cash allocation = \$150 million

Bond management vs. generic bond index

- * **YTM = 2.50%**
- * **Income cash flow = \$3.75 million annual (\$150m x 2.50%)**
- * **Creates annual cash flow shortfall = \$16.25 million (\$20m - \$3.75m)**
- * **Requires dilution of Alpha assets cash flow to fund residual benefits**

Cash Flow Matching

- * **YTM = 3.75%**
- * **Cash flow = \$20 million annual**
- * **No dilution of Alpha assets... free to grow unencumbered**

Logic

Let the performance assets (Alpha assets) perform (grow) and let the liquidity assets (Beta assets) provide cash flow sufficient to fund benefits.