

## **Are Bonds the Answer? Pension Solutions and Fixed Income's Indispensable Role in Asset Allocation**

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*Prepared remarks for David Hershey's presentation to Chicago QWAFAFEW on October 30, 2004 at the offices of Mesirow Capital Management. David A. Hershey is the Director of Research Lotsoff Capital Management. In addition, as the Executive Portfolio Manager he heads the firm's US fixed income efforts. He has been a Managing Director and Principal of the firm since 1994.*

Before beginning, I'd like to thank everyone responsible for putting together today's meeting. Hats off to all of you, for taking the time to be here and support this organization. As I told Melissa Van Hees, Director of Risk Management at BRI partners, when she invited me here to my first meeting tonight, no one seems to have enough time these days to join informal groups but from my experience they are so worthwhile.

Much of what I have to say here is going to sound like a faint echo of what Ron Ryan said. That's no coincidence since when I first began my research on the pension crisis almost 3 years ago Ron Ryan was the only one I could find talking any sense about the issue. He was like a lone voice crying in the wilderness and now there's a chorus of us singing the same tune. So if you want to hear a debate, you'll have to wait until 8:00 tonight, which means in order to get you home on time I need to get started with tonight's topic.

I've started with a warning label similar to what you might see on the side of a package of cigarettes. I don't really have anything against the Lehman Aggregate in particular. I managed bonds against that index for 10 years. It's just that contrary to common perceptions it's not a low risk asset in a pensions portfolio. Adding the Lehman Agg actually increases the portfolio's risk versus the risk free benchmark.

Which brings me to the key point I'm here to talk you about tonight. What does it mean to manage investments against a liability benchmark? I can say managing investments instead of managing pension plan assets because I've come to realize, and I think we all have over the last year or so, That the liability benchmark is not just a particular solution for a particular problem faced by Defined Benefit plans but its a general solution to almost all investment strategies.

We don't save to accumulate capital; we save money to ultimately spend it. So in almost every case we've investing assets so that one day we can either draw them down or convert them into an income stream to pay for lifestyle needs. So everyone in this room and almost all institutions are managing assets they eventually want to turn into an income stream. To value a stream of income over a period of time is the same process we use to value bonds. We discount the cash flows back to the present using the current market level of interest rates.

At this point, I usually get the incredulous looks because everyone's thinking: you want me to invest my portfolio in 100% bonds?

No. I want you to realize that your risk free asset is a bond portfolio that defeases your income needs in retirement. This is not just theory; this has very practical implications. For instance, I can't count the number of times during the late 90's, when at LCM we would get phone calls from clients following the annual performance review. It would run along the following lines: The trustees think the stock markets frothy. They're concerned about the downside risk. Could price up for us the cost of a put on the S&P 500. We'd run the numbers and call them back. Depending on how far out the money they wanted to go on the put, we'd tell them something like: You can insure your downside risks for about 5% a year. We'd give them the number and never hear back from them. No one ever executed the strategy they just wanted to know how costly the insurance was.

But what we should have told them, if I knew then what I know now: If you're worried about the height of equity valuations, then pull back your risk assets. Go into your risk-free asset that is a bond portfolio with a duration that matches your liabilities. We all know the story of how Boots seemed to be the only one sharp enough to recognize the bet.

This is a very radical change from the way we all have been taught to think about investments but that's the significance of the liability benchmark. It makes eminent sense. When you meet your benchmark you reach your goal; you've funded your retirement income.

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### **The Fall**

I think the content of this chart is familiar to most of us here in this room. It measures the ratio of the market value of pension plan assets to the market value of pension plan liabilities. It is the single best measure of the health of a pension plan. A ratio greater than 100 indicates a plan surplus. A ratio of less than 100 indicates a plan deficit.

Pension managers are extremely disappointed with how quickly their surplus disappeared. They have a right to be. Here's a brief sketch of what was considered best practices in the industry. Let's imagine we are running a major pension plan. Our asset allocation model recommends an asset mix of 60% equities and 40% intermediate term bonds. Within the 60% equity allocation we choose to diversify by style: large cap and small cap, growth and value. Best practices dictate that we further diversify with multiple managers.

This means we spend most of our time and money in the manager selection process: screening managers, sending out RFP's, listening to presentations, and monitoring performance. All for the purpose of capturing a few basis points of alpha over our sub sector index. If we are lucky enough to find active managers that beat their sector index we receive a year-end bonus. This is the way most pension professionals are compensated. We've done well by the industry best practice standards. Nevertheless, we wake up in 2002 to find our funding ratio has plummeted from 138% to 83%!

It was virtually impossible to avoid the dive in funding ratios under the traditional asset allocation framework. You don't need a PhD in financial economics to realize there was something fundamentally wrong with the way

the program is set up and how people were given incentives. They could have generated 500 basis points of alpha and still fell into a funding ratio deficit. Not only are we measuring our results against false standards, we're all attempting to generate alpha in the most efficiently priced capital markets in the world: the US equity and bond markets. That the system we operate under has become so dysfunctional is astonishing. This rigid infrastructure we've set up to manage money here in the US is not serving the plan sponsors goals, it's not serving the employees goals. The families of the United Airlines pilots would not be experiencing sleepless nights over the safety of their retirement incomes if we would have managed the investments targeted at building a surplus over the liability benchmark. An investment strategy benchmarked to a liability index is *the surest* way for a plan to keep its funding ratio above 100% and to smooth contributions. . .yet it's still not being used.

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### **The Balance Sheet Mis-match problem**

Here's a profile of the typical rate mismatch of a thrift with a 30 year mortgage portfolio funded with short term liabilities. You can see that the typical pension plan has a rate mis-match of twice the magnitude of what proved so costly to the thrift industry.

There are some uncanny parallels between thrift crisis twenty year's earlier and the pension crisis of today. They both attempted to boost income by buying assets with much higher expected return but with little correlation to their liabilities. Both were legally acting as fiduciaries but treated their fiduciary role as a source of profit. Both were backed by a federal insurer responsible for covering any shortfalls. Both have responded to an unfavorable performance environment by reaching for riskier assets with higher expected returns. Both have used accounting rules to cover their errors.

I'm not recommending plans add 24-year duration bonds today at these rate levels to close the gap. I simply wanted to illustrate the magnitude of the rate gap. At the end we'll get into specific asset allocation strategies that can help close the gap.

I've spoken at a couple of Asset Allocation conferences, and I tell them were here today to talk about AA or asset allocation. But there is another kind of AA who's starting point we would do well to imitate. The first step in the twelve-step program is to admit that we have a problem. As we like to say in Chicago, Da' Nile is not just a river in Egypt.

I have to say *that* because so many plan sponsors are still in denial. Somehow, they don't accept that the responsibility for this financial disaster lies in a flawed investment strategy. Asset Allocations have remained remarkably constant *despite* the losses. There's been a lot a finger pointing at the accountants, the actuaries, at the greedy plan sponsors, at conflicted consultants. But investment

managers need to accept our part of the responsibility. We weren't good financial engineers. We didn't correctly specify the problem.

I've spoken in London a couple of times over the past year and I'm sorry to report that Europe is 2-3 years ahead of the US in the debate over pension funding. According to a survey by Plan Sponsor Magazine, only 12% of the pension plans here in the US employ a hedging strategy for liability risk. They also found that less than 1% of the largest plans in the US tie compensation to the performance of the funding ratio. Ideally, the funding status should be *the standard* for assessing pension plan performance.

Next let's identify the mistakes that put us into this mess. I think the two key mistakes were: 1) operating under an incorrect definition of risk, 2) believing in the false hopes offered by the equity market.

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### **The Funding Position is dominated by liability returns**

Operating under the assumption that over time stocks will beat intermediate bonds, pension plans have been told that they can ignore the market value of plan liabilities. But from the perspective of the plan sponsor they underestimated their downside risk. Plan sponsors face an asymmetric risk profile. The consequences from under-funding are far more painful than the gains available from over-funding. But our investment strategy fails to reflect our position.

The chart shows that liability returns are highly interest sensitive. Notice each time over the last 18 years, when the funding ratio went negative, it was because of a fall in rates. It was the rise in the market value of the liabilities in every case that drove the funding ratio returns below zero. The chart makes it obvious that any rational approach to addressing shortfall risk in a pension plan needs to include adding interest sensitive assets to hedge pension liabilities.

The volatility in the funding ratio is directly traceable to the volatility in the market value of the liabilities. To the extent that pensions assets move in conjunction with pension liabilities the surplus becomes more stable. Viewed in isolation, an unhedged liability moves at a 15% volatility. Viewing assets and liabilities in combination dampens down volatility to just 13%. But that's not enough.

Here's a homely anecdote to illustrate the point. Not this summer but a year ago, my wife told me that we should start calling our three boys in from the backyard as soon as dusk falls because there were 62 deaths in the state of Illinois from a disease transmitted by mosquito bites. It seemed to me that of the 12 million people in Illinois the odds of one our kids catching this disease was quite remote. To which my wife sagely responded, "How can you calculate the value of one of our children's lives with the use of statistics?" But I'm a trained financial economist, I replied, it's a union rule. So she had a good point, it's not just the *probability* of a loss but also the *severity* of a loss that needs to be considered when evaluating risks.

Now that the darkness is upon us, and riskiness has landed and bitten us, we can say for sure that a 13% annual return volatility is too much. The pain became evident when companies were forced to

divert cash flows and debt proceeds away from operations and into the under funded pension plan.

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### Equity Cult

Since culpability for the fall largely lies in an equity bet gone wrong, we first need a more realistic assessment of what the equity market is capable of delivering. *Faulty premises* form the essence of what's been referred to as the "Equity Cult." What was behind the thinking that led pensions to believe that they could fund their retirement obligations in equities with minimal risk?

The first idea was that pension plans should maximize their total return without regard to funding needs. Number two, that pension plans can afford to take higher risks because they are long-term investors. These first two ideas sound fairly innocuous but the final ingredient makes for a particularly noxious combination: that the risks in equities diminish over time. *The idea that time is a risk reducer is the fatal flaw behind conventional asset allocation work.* Equities are just as risky in the long run as they are in the short run.

True enough the probability of loss falls over time, but not its expected value. Current actuarial practices proceed as if investing in equities for the long run results in a free lunch.

**To refute this we need only point out that variance is a measure of *uncertainty*; not the appropriate measure of *risk* for pension plans. A proper risk measure not only takes into account the chance of a loss but also its severity. As Zvi Bodie has made clear, the expected value of a loss is precisely measured by the cost of a put option investors can buy to protect against such losses.**

While the probability of a loss on a positively returning asset falls over time, the cost of insuring against that event does not fall. In fact it steadily increases.

Note the inherent contradiction in the equity cults logic: if we believe that over time capturing the equity premium is a near certainty, then we cannot at the same time maintain that the equity premium is a payment for taking risk.

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Here's a useful table for forming clear concepts concerning these **competing paradigms**. I refer to the traditional method as the Sharpe model after Bill Sharpe, who popularized the idea of using standard deviation as the measure risk. And the liability-benchmarking paradigm I attribute to Martin Leibowitz, who began writing articles nearly 20 years ago, exploring these themes.

- a) **Model** - The efficient frontier model's main conclusions can be concisely stated: stocks for the long run and bonds as a buffer. The Leibowitz camp counters that pension plans closely resemble financial institutions and we will better understand their performance if we think of them as a quasi-bank.
- b) **Objective** - Stable asset returns are not the answer. What we want from pension investing is assets that return more than the liabilities and thus generate a surplus value.

- c) **Risk**– The Sharpe model measures risk as the variance of returns. Leibowitz measures risk against a return floor, and asks, “what’s the chance of falling below our target level.”
- d) **Benchmark** The risk-free asset for Sharpe is cash and for Leibowitz it is a bond portfolio that resembles a plan’s liability schedule.
- e) **Correlation** Their attitude towards correlation differs; Sharpe values *negatively* correlated assets, Leibowitz values assets that are *positively* correlated with the liability benchmark.
- f) **Market Value of Liabilities**- Sharpe says liabilities can safely be ignored. In Leibowitz, the liabilities are front and center as the benchmark against which we measure all of our investment decisions.
- g) **Role of Fixed Income** In Leibowitz, LD bonds have a prominent role to play in the pension portfolio: both to reduce volatility and to add to the surplus position.

#### h) **Tactical Asset Allocation**

The Sharpe model believes you can’t time the market so stay fully invested at all times. The Leibowitz model says scale your investments by their contribution to steadily building consistent surpluses.

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### An Emerging Consensus

Investment professions have made real progress over the past couple of years in accepting that the liability benchmark has a legitimate role to play. Here’s a list the key thinkers that have endorsed it. I keep a file on this topic and I could have easily doubled the list of quotes but I limited this list to some names with whom I thought you might be familiar. However, we need as an industry to develop coherent approaches as to how this new lodestar will effect our asset allocation. One barrier to thinking clearly about this issue is the tendency to view investments from a focus on returns instead of a focus on risk. We all are ultimately in the business to capture returns. Watching our wealth grow exponentially is the ideal. It’s probably what drew many of us into finance. We wanted to capitalize on the power of compound interest.

But returns are what the markets pay. They are not something we directly control. That’s why it really is backwards to say we will choose a 7-8% target return because that’s what we need and then go out and develop an asset allocation that will reach that target. But what is under our control is to manage risk. We can combine assets to target a certain risk tolerance. So what I am advocating is a risk centered or a risk centric approach to investing rather than a return centric approach.

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### Surplus efficient frontier

Here’s a chart exemplifying the new paradigm called the surplus efficient frontier. It measures all asset returns against the liability benchmark. The objective is to add assets to the portfolio that

optimize your surplus return, your return above the liability benchmark. You can see that viewed against the liability benchmark the equity market has a poor information ratio. This chart assumes a 2.5% equity risk premium with a 12% tracking risk versus the liability benchmark. It's not hard to find alternative investments and hedge funds with higher information ratios that can be leveraged to match the stock markets expected risk premium.

Plan managers need to apply a more rigorous approach to risk budgeting and risk management. For those using risk budgeting to limit risk, immunizing the rate risk frees up risk dollars to be allocated to other alpha generating strategies.

Much of the resistance to implementing the necessary changes is grounded in the belief that it's a bad time to add long duration bonds to the portfolio. Here it's important to distinguish between a tactical call and a strategic plan. The judgment to tactically underweight interest sensitive assets for the purpose of growing the surplus *is* defensible. The strategic decision to allocate assets against a cash benchmark is *in*defensible.

Using the liability benchmark highlights the risk of adding assets uncorrelated to the plan's liabilities. There is nothing wrong, and at times it's quite commendable, to make a mismatch bet. But it's important to measure the mismatch risk and the expected payoff for accepting this risk.

Adopting a liability benchmark is the soundest way for reaching the objective of paying out retirement benefits when they come due. Presumably, a performance benchmark should bear some resemblance to the objective of the plan. The current standards of maximizing total returns and measuring performance against cash ignore the plan's purpose. The liability standard is a superior target because when you meet your benchmark you've reached your goal.

As you can tell from what I've said here tonight, I believe that pension plans suffer from an identity crisis; they don't know who they are. And as we all know, not knowing who you are can lead to bad decisions. There is a scene from the 1987 movie Moonstruck, where Olympia Dukakis, who was delightful in her role as Cher's mother, is walking home with John Mahoney, who by the way looks much younger than he does in the sitcom Frasier. Mahoney plays an emotionally confused man trying to cheat father time by looking for love with all the wrong women. When they reach Mrs. Dukakis' doorstep, Mr. Mahoney *boldly* asks for an invitation inside. Mrs. Dukakis *gracefully* declines on the grounds that [pause] "she knows who she is."

The message is clear, not knowing who you are can mean waking up next to someone you really don't want to know that well. For pension plans, not knowing who you are may mean becoming intimate with some money managers with whom you wouldn't normally socialize.