## Product Focus
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### Jim Moore Discusses Liability Driven Investment Strategies and Concepts

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Dr. Moore is a Executive Vice President and product manager for Long Duration and Pension products. He joined PIMCO in 2003 from Morgan Stanley where he was in the Corporate Derivative and Asset Liability Strategy groups. At Morgan Stanley Dr. Moore was responsible for asset-liability, strategic risk management and capital structure advisory work for key clients in the Americas and Pacific Rim. Previously, he was associated with Enhance Reinsurance, the Wharton Financial Institutions Center and William M. Mercer Co. While at Wharton, Dr. Moore taught courses in investments and employee benefit plan design and finance. He has thirteen years of investment experience and holds bachelor's degrees in applied mathematics and economics from Brown University and a PhD from The Wharton School of the University of Pennsylvania with concentrations in finance, insurance and risk management.

*Liability driven investing (LDI) is emerging as the new paradigm in managing defined benefit pension plan assets. In the interview below, PIMCO Executive Vice President Jim Moore, an expert on LDI and pension plan asset management, explains what liability driven investing means, why it is gaining traction among pension plan sponsors and what sponsors should think about in implementing an LDI approach.*

**Q: What does the term "liability driven investing" mean?**
**Moore:** Liability driven investing, or LDI, is really about recognizing that the ultimate goal of a pension plan is not to match or exceed the performance of other pension plans, but to fund the pension plan's liabilities. So a plan sponsor implementing an LDI approach is essentially bringing the plan's liabilities into the picture in determining the appropriate asset mix for the plan, rather than thinking about asset allocation strictly in terms of assets and the relationships among various asset classes.

The LDI concept began to emerge following the turmoil in pension plan funding status during the period from 1999 to 2002. At the end of 1999, the average S&P 500 pension plan was about 120% funded. By the end of 2002, the funded ratio had plummeted to about 80% because of falling equity prices and falling interest rates. The rapid change in funded status put a lot of pressure on pension plan sponsors, not only in terms of contributions to the pension plan but also in terms of investor concerns about volatility in the pension. These factors led plan sponsors to begin looking for ways to reduce the volatility of pension plan funding.

**Q: There seems to be a groundswell of interest in LDI recently among pension plan sponsors. What is behind the growing interest in LDI?**
**Moore:** The pure economic risk associated with a pension plan has always been there, but changes in accounting standards and changes resulting from the Pension Protection Act of 2006 have made these risks much more transparent to investors as well as plan sponsors. That increased transparency is bringing plan funding status more to the forefront in the asset allocation thought process. And plans that move

toward an LDI approach can potentially lower the volatility of plan funding costs and the volatility in their shareholders' equity.

**Q: What are the changes in pension plan accounting and how did they come about?**

**Moore:** The changes that the Financial Accounting Standards Board (FASB) implemented are fundamentally connected to the turmoil in 1999-2002. The turmoil during that period was not limited to pensions and pension funding status. There were also dramatic bankruptcies—Enron, WorldCom—that were very visible and shook a lot of investors' confidence in financial markets. As a result, Congress passed the Sarbanes-Oxley Act in 2002, which, among other things, required the Securities and Exchange Commission (SEC) to conduct a forensic audit of the U.S. accounting system.

Part of the SEC audit was to identify areas where there were substantial liabilities or contingent liabilities on the part of corporate sponsors and seek to readdress that. In 2005, the SEC issued its report and pointed to unfunded pension liabilities as one of the greatest sources of unrecognized liabilities for corporate sponsors. The SEC essentially directed FASB to address this and move funded status of pension plans, an off-balance-sheet item, onto the balance sheet.

This change in accounting standards is also in accordance with what has happened globally. The changes that FASB implemented are very similar to what the Financial Reporting Standard System in the UK introduced a few years ago with FRS17. A similar movement is underway with International Accounting Standards. Under the International Accounting Standards, what we are seeing is a convergence of accounting to recognize the funded status of the pension plan on the balance sheet.

The second phase will involve changes in pension accounting on the income statement side. This will be trickier and may take some time because there is less of a consensus among the members of FASB. That change is in the pipeline and probably will not be coming in the near future. But if you look out four or five years from now, we will probably see some major changes on the income statement side as well as on the balance sheet.

**Q: How is the Pension Protection Act influencing plan sponsors in terms of LDI?**

**Moore:** The Pension Protection Act includes a number of changes that are driving interest in an LDI approach. The Act essentially moves plans toward more of a "mark-to-market" disclosure, where asset gains, losses and assumptions are closer to market reality.

For example, under the previous regulations, plan sponsors could smooth asset gains and losses over a five-year period, and changes in interest rates used to discount future liabilities could be smoothed over essentially a four-year period. Well, in a period like 1999-2002 where interest rates are falling and the equity markets are dropping at the same time, this smoothing can result in plans being much more underfunded than

their latest disclosure might suggest. So one of the things the Pension Protection Act does is shorten these smoothing periods to two years.

The Act includes other steps to shore up the funded status of pension plans as well and protect the Pension Benefit Guarantee Corporation (PBGC), which insures corporate pension plans. This also goes back to the 1999-2002 turmoil when corporate bankruptcies took the PBGC from a surplus position to a sizable deficit.

I should also note that in exchange for all this tightening in regulations, one of the things that Congress did is allow companies to make contributions, once the plan is in a funded status, up to 150% which should provide more of a cushion against a period similar to the one we saw in 2000 and 2002.

**Q: What types of solutions are available for plan sponsors looking to implement an LDI approach?**
**Moore:** There really are a broad array of approaches to LDI and I would stress that the way we at PIMCO look at LDI is not as a product or a single answer. LDI is really a thought process about redefining the norm in the asset allocation process.

But if you think about what LDI amounts to conceptually, you can divide a portfolio into two elements: one part that is hedging against the liability risk and then a second part that is looking to generate excess return. To date, most of the plan sponsors we have talked to that have moved in this direction have been more focused on the liability hedging dimension. What most of these plan sponsors are finding is that the structure of their liabilities is very different from a traditional fixed income portfolio. For example, a typical defined benefit plan may have liabilities with a duration of 12 or 14 years, while the duration of the Lehman Aggregate Bond Index—a typical index for core fixed income allocations—is close to 4.5 or 5 years. In other words, defined benefit pension liabilities tend to be far more sensitive to changes in interest rates than a typical core bond portfolio. So the first step we see most plans taking is to move to a longer duration fixed income benchmark, such as the Lehman Long Government Credit Index with a duration of about 11 years.

Some plan sponsors are extending the duration of their fixed income portfolios even more dramatically. Essentially, these plans are recognizing that fixed income only amounts to 30% or 40% of their portfolio and that unless they are going to devote more to fixed income, they need their fixed income allocations to work a little harder. We have seen a number of plan sponsors move to fixed income portfolios with 20 or 25-year durations. Some plans are going even further by using Treasury futures or interest rate swaps to create "overlays" that add duration (for more on overlays, click here for an interview with PIMCO Portfolio Manager Jim Keller).

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**Q: To what extent can these LDI approaches fully hedge the risks associated with a defined benefit plan?**

**Moore:** An LDI approach is generally not going to completely eliminate a plan's risk. Even those plans that fully hedge the duration risk within their liabilities are still going to have the risks associated with the second part of the portfolio, which is the risk asset portfolio.

Some plans do take more of a "clean sheet" approach where they establish a target risk level for the entire portfolio in terms of how much the portfolio can err in tracking the liabilities. These plans make fundamental tradeoffs between risk and potential return, first defining a risk budget and then really thinking through the elements that they want to contribute to that risk budget. For example, some plans might be willing to take more risk from a mismatch in duration and then try to maximize the diversification in the portfolio of risk assets.

**Q: What is the role of equities in an LDI framework? Is there a place for large equity allocations in this approach?**

**Moore:** When we look at the history of pension plan asset allocation—not just over the last ten years or so but back to the beginnings of ERISA[1]—two things become clear. One is that, in the past, it was rare to see equity allocations as high as the norm is today. And second, plan sponsors have traditionally worked from a framework where there are two asset classes to choose from: equities or fixed income.

Plans that are fully funded or have frozen plan benefits can completely immunize themselves against risk with a fixed income portfolio. But open plans face a service cost that increases the liabilities over time and therefore turn to equities and other risk assets to cover that service cost.

So I think the question plan sponsors need to ask themselves in considering their equity allocations in an LDI framework is whether they are getting sufficient excess returns from equities relative to the risk they are taking *relative to the liabilities*. And I think the broadening of the asset classes that are available that we have seen in recent years calls into a question the current norm of a 60 or 70% equity portfolio. In an LDI framework, it may make more sense to take risk in assets like commodities, real estate, timber, or emerging markets, which may enhance the diversification of the risk portfolio. And really, this is open-ended as far as potential sources of excess return other than equities. For example, the use of active management is another potential source of added value.

[1] The Employee Retirement Income Security Act of 1974 (ERISA) sets minimum standards and tax rules for private industry pension plans.

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**Q: The LDI framework seems to focus almost exclusively on hedging interest rate risk. Does this approach over-emphasize interest rate risk at the expense of other risks such as inflation that should be addressed?**

**Moore:** There are plenty of other risks involved in a defined benefit pension plan besides interest rate risk, including inflation, mortality, and other actuarial risks. However, in terms of the liabilities, interest rate risk is the more important risk by an order of magnitude, as well as being the easiest to do something about. Other risks tend to develop over longer time periods and some of them may not be hedgeable.

If we look specifically at inflation risk, the degree of risk depends on the plan's demographics and what is explicitly promised to employees. Bear in mind that much of the accrued liability on the books is for retirees whose benefits are essentially set in nominal terms going forward. Even for active employees I have some qualms about assuming that there is a large inflation sensitivity, if there is no benefit indexation to inflation, for two reasons. First, pay raises generally do not move one-for-one with inflation changes; they tend to be muted. Second, there is the question of how far out into the future are plan sponsors obligated to be conscious of hedging inflation in today's asset allocation. Perhaps there is an obligation to look out five years, or maybe 10 years, but at some point future salary increases are tied to future service. Given the vagaries of the continued status of defined benefit plans (and future employment), I see an equal risk of over-estimating inflation sensitivity in some cases.

If benefits are tied to inflation explicitly through cost-of-living adjustments, plans have a very real need for explicit inflation hedging. In that case, there may be benefits to holding long-dated Treasury Inflation Protected Securities (TIPS).

**Q: Thank you, Jim.**

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