

Pentegra Retirement Services White Paper

April 2008

The Impact of the Pension Protection Act on Defined Benefit Pension Plan Investing

Introduction

This White Paper discusses Pentegra's point of view on the impact of the Pension Protection Act of 2006 (PPA) on defined benefit (DB) investing.

US pension fund investment managers are faced with the complex task of complying with the requirements of the PPA legislation in 2008. These requirements have profoundly changed the way pension liabilities must be valued, bringing mark to market valuations to liabilities. The PPA also gives managers the opportunity to update the valuation and investment of the assets.

Pentegra spent over a year conducting studies of possible scenarios with some of the most respected and experienced pension and benefit experts. Our analyses focused on looking for solutions that provide the best possible result under the new requirements with the least amount of risk. This white paper is our effort to share our insights with our clients. Pentegra strives to explain the investment strategy we have adopted, for Pentegra's \$2 billion Defined Benefit Plan for Financial Institutions (a multiple employer plan), under the requirements of the PPA.

We hope you find this paper useful. If you are not a Pentegra client, we encourage you to reach out to your own experts to establish the most effective investment strategy for your pension plan. That will ensure your ability to sustain the plan under the PPA and meet all future benefit payments. Pentegra is available to respond to questions about our defined benefit investment strategy. Please contact Rich Rausser, Vice President Consulting Services at 1-800-872-3473 or rrausser@pentegra.com.

What is Pentegra's background?

As the investment manager for a \$2 billion pension fund, Pentegra is responsible for more than 250 member plans and their ability to meet their benefit payments obligations to their participants. In over 65 years Pentegra has never missed a benefit payment.

Changes in Investment and Risk Management for Defined Benefit Plans

The framework for investing pension assets changed significantly with the implementation of the PPA. Plans will determine their funded status by applying the metrics prescribed by the PPA, some of which we list below. Actuarial valuation results will be tied to current capital market returns and volatility, especially to changes in long term interest rates. A particular area of focus under the PPA is the funding ratio (assets divided by liabilities). The PPA considers plans "at risk" that are below 80% funded (have a funding ratio below 80%), and imposes payout restrictions on such plans. Pension plans are therefore expected to shift from focusing on maximizing asset returns to minimizing funding ratio volatility.

Changes Under the PPA

The following are key changes under the PPA:

- Before the PPA, defined benefit pension plans valued liabilities primarily on actuarially assumed rates of return. After the PPA, the accrued liabilities are marked to market based on either the spot yield curve of varying maturities, or on the 24 month average of corporate bond yield curve segments. The yield curve segments are comprised of three maturity intervals: 0-5 years, 5-20 years, and 20+ years.
- Before the PPA, shortfalls in funding could be amortized over periods of up to 30 years. The PPA requires the amortization of any shortfall over seven years, and has a 100% funding target.
- Prior to the PPA, valuations of plan assets could be based on five year asset smoothing. Under the PPA, plan assets are based on either their current market values, or their average values over two years.

Liability Driven Investing

Prior to the PPA, investment strategies generally focused on the assets in the plan. Due to the changes under the PPA, with mark to market valuations of liabilities, many plans ultimately may move toward a liability driven investment environment. Although the PPA legislation is due to go into effect for most plans in 2008, many defined benefit pension plans may not have yet reviewed the investment implications of the PPA, or decided on how to update their investment plan.

Under the PPA, small changes in interest rates can have a significant impact on a plan's funded ratio (assets divided by liabilities). Minimizing volatility of contributions is expected to be a primary investment objective for many plans. Plans can no longer focus only on asset class driven benchmarks, such as the Russell 3000 Index, a total stock market index. Asset classes which have a high correlation to liabilities, such as long term bonds, will be a key investment performance benchmark.

Asset Allocation

Under the PPA, two factors impact the funding status in a DB plan: First, the duration¹ (i.e. interest rate sensitivity) of the liabilities. Changes in interest rates result in changing liability values. And second, the degree to which asset values move in line with, outperform, or underperform, the changing liability values.

Asset classes which may have been lower-risk before the PPA, in an asset focused environment, are higher risk investments under liability driven investing. Duration mismatches with the liabilities create increased risk for previously low risk asset classes. Long-duration bonds become the "risk neutral" benchmark as they come closest to matching the duration of the liabilities.

A 3-month T-bill that was a "safe" investment in a traditional asset only environment might not be an efficient investment when considering liabilities payable over 80 years in the future. In the PPA world, longer duration bonds (which match the duration of the liabilities) are a lower risk investment than shorter term securities that do not match the interest rate sensitivity of the liabilities. Figure 1 and Figure 2 (end of document) show risk/return tradeoffs under the pre-PPA asset driven environment (Figure 1) and the PPA environment (Figure 2).

Interest Rate Swaps and Alpha Strategies

Under the PPA, strategies that mitigate interest rate exposure, such as duration / cash flow matching, and interest rate swap overlays², will receive greater attention. Plans will seek to minimize contribution volatility with adjustments to their fixed income oriented investments.

Plans will focus on how the assets they manage change in value with changes in liabilities caused by changes in the PPA yield curve. Small changes in interest rates can have a significant impact on liabilities, assets, the plan's funding ratio and contribution requirements. Using the long term bond as a benchmark, many defined benefit plans will seek to apply investment strategies that reduce the fluctuations in the funded ratio caused by even small changes in interest rates.

With interest rate swap overlays, portfolio managers can align the duration of assets with liabilities. They can then seek to add return with other asset classes that may provide returns in excess of returns provided by long term bonds, including "alpha" strategies³.

Pentegra's approach to Defined Benefit investing under the PPA

Pentegra's investment strategy focuses on a liability driven approach, recognizing that asset and liability values will be sensitive to changes in interest rates under the new PPA rules.

The Investment Committee, of the Pentegra Defined Benefit Plan Board of Directors, works with Pentegra's Chief Investment Officer, and internal investment staff, to achieve the following objectives:

- Develop investment objectives and policies
- Implement and manage the investment program
- Manage investment managers of the Pentegra DB Plan
- Manage internal portfolios

The overall investment management also includes working with internal and external consultants (e.g. asset/liability modeling studies), and other experts.

The definition and characteristics of pension liabilities have changed significantly under the PPA. Effectively managing volatility and risks, in the new world of the PPA, is a unique challenge for defined benefit investment managers. The Pentegra Defined Benefit Plan for Financial Institutions continues to focus on managing the risks, in an evolving investment process, while seeking to meet or beat its pension liabilities.

¹ Duration is a measure of the sensitivity of the price (the value of principal) of a fixed-income, or similar cash flow instrument, to a change in interest rates. Duration is expressed as a number of years. The price of a fixed income investment rises when the interest rate falls.

² An "interest rate swap overlay" is an exchange of cash flows over a fixed period of time. For example, in one type of swap, one party to the interest rate swap receives a fixed rate of interest, in return for paying a floating rate of interest (generally LIBOR). Interest rate swaps can be collateralized using an underlying portfolio of assets, hence the term "interest rate swap overlay."

³ "Alpha" represents the ability for a manager to generate additional value over a benchmark, independent of market movements.

Defined Benefit Terms

Investment management for defined benefit pension plans involves use of complex financial strategies. The terms that follow are commonly used today among defined benefit portfolio managers.

Alpha--A measure of performance on a risk-adjusted basis. The excess return of the portfolio relative to the return of the benchmark index is a fund's alpha.

Alpha strategy--An investment strategy that attempts to increase the alpha (excess return above a benchmark) of the portfolio. A portion of the portfolio's assets might be set aside for an alpha strategy.

Beta--A measure of the risk of a portfolio compared to the overall market.

Defeasance--The process of setting aside enough future cash flows from investments to match future liabilities or debt obligations.

Derivative--Examples of financial derivatives include forward foreign exchange, bond futures, swaps, and options. The value of the derivative depends on changes in underlying assets. The most common underlying assets include stocks, bonds, commodities, currencies, interest rates and market indexes.

Duration--A measure of the sensitivity of the price of a fixed income or similar cash flow instrument to a change in interest rates. Duration can be expressed as a number of years.

Interest Rate Swaps--An exchange of cash flows over a fixed period of time. For example, in one type of swap, one party to the swap receives a fixed rate of interest, in return for paying a floating rate of interest (generally LIBOR).

Overlay--An investment strategy that can be put on top of, or "over", a defined benefit plan's existing asset allocation. Interest rate swaps can be collateralized using an underlying portfolio, hence the term "interest rate swap overlay".

Portable Alpha--The ability for a portfolio to separate alpha and beta risk and return in a portfolio.

Risk adjusted return--The return of a portfolio taking into consideration the amount of risk.

Figure 1. Before PPA. The return vs. risk line shows, schematically, the tradeoff between expected return and risk. In Figure 1 (below), the 3 month T-Bill (“Short Term”) has a lower risk (lower standard deviation), than Long Bonds. Pre-PPA, the risk focus was on the variability of returns.

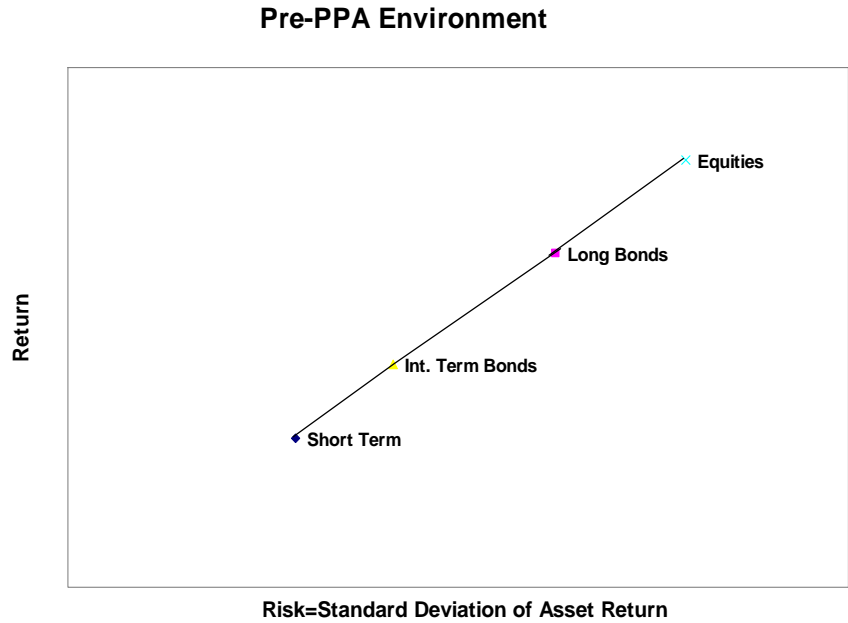
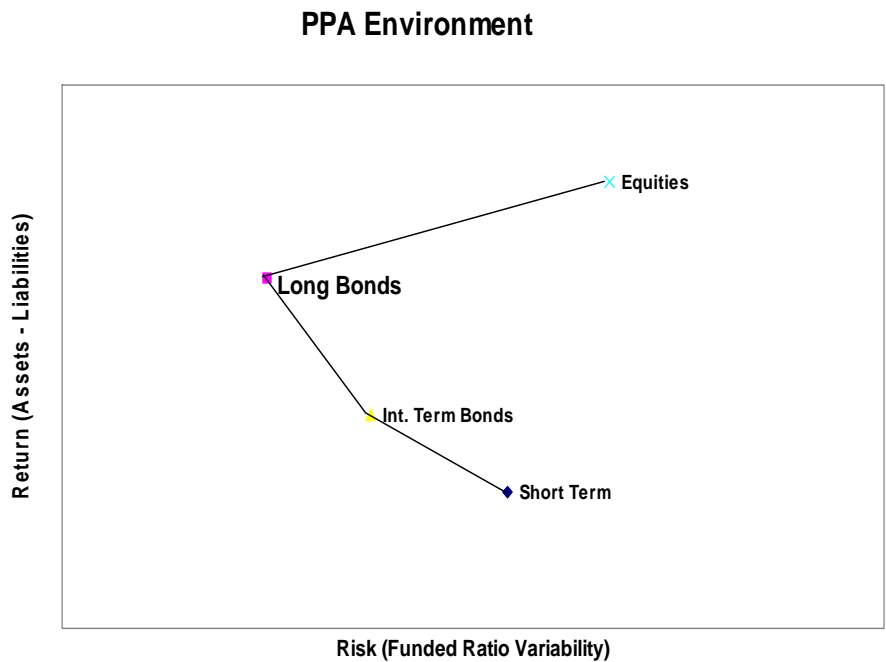


Figure 2. After PPA. Figure 2 shows the change in the risk / return profile in the PPA environment. The definition of risk in the new regime is the variability of the funding ratio (plan assets divided by plan liabilities). The 3 month T-Bill (“Short Term”) has more risk than the Long Bond. Plans have debt obligations far into the future, while the 3 month T-Bill is a short term investment.



Our difference is your advantage



