Corporate Defined Benefit Pension Risk Management: Solving the Equity Investment Conundrum

By Ryan McGlothlin

Corporate defined benefit pension plan sponsors are more focused than ever on their funding level and on trying to close any funding deficit. Most sponsors choose to take some level of investment risk to try and close their funding gap, expecting to earn higher returns which will lower their contributions. Typically this risk is taken in the equity markets. However, equity markets periodically experience sharp falls which sets the ability of sponsor’s meeting their funding targets back years and sharply increases required contributions. Often these sharp falls occur at the very time when a sponsor’s business is experiencing other pressures. Managing investment risk explicitly is something sponsors need to seriously consider.

Incorporating equity options (puts and calls) into a plan’s investment strategy can be an efficient way to manage equity risk. This approach may be the only way to solve a current conundrum many sponsors face of conflicting accounting and contribution standards set forth by the Financial Accounting Standards Board (FASB) and the government through ERISA, respectively. The conundrum is discussed in more detail below. Relatively simple equity option strategies can provide sponsors with the downside risk protection they seek while still providing the opportunity to earn investment returns above less risky investments. The tradeoff is forgoing some potential excess returns that may be beyond what the sponsor may need to reach their goals.

The conundrum faced by plan sponsors is this: you cannot easily de-risk a pension plan on an accounting basis and simultaneously de-risk on an ERISA contribution basis. The dominant risk faced by most plan sponsors on an accounting basis is the risk that long-term bond yields continue to fall which increases the present value of liabilities. The best way to manage this risk is to hold more long-term bonds (and/or
interest rate swaps) that serve to match the liabilities. This concept of liability matching is at the heart of most pension de-risking strategies and involves rotating from equities and equity-like assets to long term bonds as the pension funding level improves.

However, on the ERISA basis required for most plan sponsors to calculate required cash contributions, moving more into long-term bonds does not fully reduce the risk that contributions will rise and can actually potentially increase that risk. Under MAP-21 and now HATFA, plan sponsors use 2-year smoothed interest rates that are constrained by corridor around a 25-year average of corporate bond yields to calculate their liabilities. In practice, this means that liabilities have very little sensitivity to changes in long-term bond yields in the short run. (Note: over the next five to seven years the corridor expands and current rates will be more important, therefore, ERISA liabilities will become more sensitive to interest rate changes in the future.) All of the funding level risk on this ERISA basis resides in the volatility of asset values. Due to the interest rate structure used to calculate the liabilities there is no viable liability hedge. So, for most plans, the dominant risk on an ERISA funding basis is equity returns, not interest rates.

Plan sponsors who are solely concerned about improving their funding on an accounting basis, who are already contributing more than the required minimums, and/or who have the financial flexibility to increase contributions should the investment markets falter do not need to worry much about the ERISA funding basis. But for sponsors who wish to (or have no choice but to) contribute only the required minimum and who are sensitive to sharp increases in these contributions, there are limited risk management options available.

For these sponsors, the quickest way to reduce risk would be to move from equities to cash or short-duration fixed income. However, with actuarial liability discount rates in the region of 6% and cash/short bond yields in the region of 0% - 1%, it is easy to see how de-risking in this way would simply lead to the deficit widening as asset performance would lag the growth in liability value that results from the discounting process. Again, moving to long-term bonds doesn’t help much as these bonds have high absolute volatility (30-year maturity bonds have volatility similar to equities) and yields that are lower than the liability discount rate. One way that risk can be managed is by using a form of equity collar with a payoff at maturity that operates like the chart below:
In this example, the investor wishes to have protection for the next year. The investor sells equity upside beyond 8% in exchange for protection against the first 15% in equity downside. If the markets fall beyond 15%, then the investor starts to suffer losses at that point, but the plan’s losses are softened. There is no up-front premium paid for this – the payment for the downside protection is in the potential upside forgone. So in a year when the equity markets return 12%, they only get to benefit from 8% as payment for the downside protection.

In the example above, risk is reduced on both an ERISA and an accounting basis. Potential upside is also reduced, but pension risk is asymmetric for most sponsors. The pain of the downside is higher than the potential gain on the upside as only so much upside can be used before funding goals are achieved while the sponsor bears all downside risk. The trick is to work out where potential upside can be sold without reducing potential returns too much and also form the downside protection that the plan sponsor wants. For example you could structure the downside protection to provide partial protection from the first $1 of loss, full protection after X% loss or some combination thereof.

Using options for risk management provides sponsors with an extra degree of flexibility as well as the ability to implement an investment view. Managing risk this way comes with additional cost and complexity, but can create more favorable outcomes. Because option pricing can be opaque and the banks which deal in these securities are counterparties, not fiduciary advisors, plan sponsors should ensure that they have the right advisory, governance and counterparty credit risk management structures in-place before undertaking this kind of investment strategy. There is a high degree of flexibility with these sorts of option structures, from the underlying equity indices that can be hedged (e.g. S&P500, EuroStoxx50, Nikkei, etc.) to the maturities of the options (1 month to 5 years), to the payoff profiles that
can be created.

At P-Solve we pioneered the use of these kinds of equity hedging tools for pension plans over 10 years ago and have successfully implemented over 75 equity risk management structures over that time.