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Tail-Risk Hedging:

A Sensible Strategy for Defined Benefit Plans Now?

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Tail-risk events–which are loosely defined as the probability of rare events taking place that could impact a portfolio of investments—are happening more and more frequently these days and need to be addressed by investors and their advisors to protect their investments. When describing tail risk, quant investors usually refer to Black Swans, fat tails, and negative skew. For Defined Benefit (DB) Plan managers, the ultimate tail risk is a "Perfect Storm"–periods such as the tech bubble crisis period from 2000-02 and the 2008 financial crisis when return-generating assets crashed and investors' "flight to quality" pushed down yields on Government bonds to historical lows.

This lethal combination of declining asset prices and increasing present values of liabilities pushed the funded ratios of DB plans from well funded to underfunded. According to Milliman's Pension Study, the average funded ratio for the 100 largest U.S. corporate plans declined from 123% in 2000 to 82% in 2002, and then after recovering to 105% in 2007, they fell to 80% in 2008.

Against this background, there is a compelling case for a hedge that would provide some protection against possible future tail-risk events. However, there are some important questions that need to be addressed by a fund manager contemplating a tail-risk hedge:

1. Due to the cost of tail-risk hedges, should DB plans be a buyer or seller?
2. How will tail-risk hedges fit with my plan's current strategic/glide path strategy?
3. Which tail-risk hedge vehicle is appropriate for my DB plan, if any?

Due to the Cost of Tail-Risk Hedges, Should DB Plans be a Buyer or Seller?

A number of prominent researchers have questioned whether the cost of tail-risk hedges can justify the expected payoff. Robert Litterman in a recent *Financial Analyst Journal* Editor's Corner piece cautions that pension funds with long horizons, ample liquidity, and low leverage should avoid the temptation to blindly buy equity tail-risk insurance. Instead, they should seriously consider selling such insurance. Similarly, the authors of a recent AQR Capital Management paper contend that the long-term cost of such insurance strategies will be larger than the payoffs.

Skeptics cite both the cost of implementing tail-risk hedges with widely used hedging instruments, such as put options and long-volatility strategies, and financial-market theory to support their positions. In the context of

rational markets, insurance shouldn't be a free good. The foregoing arguments are unassailable if plans focus exclusively on the long term and the hedge imposes a significant drag on performance.

Few DB plan sponsors, however, have the luxury of ignoring interim outcomes. Short and intermediate-term outcomes in the context of current accounting and funding rules can have important balance-sheet consequences, especially for sponsors of underfunded plans. In our opinion, the combination of potential market opportunities and risks that characterize the current environment suggests that tail-risk hedges warrant a thorough look, particularly if it can be implemented cost effectively.

Addressing Dual Challenges of Underfunding and De-Risking

Once DB plans are fully de-risked–an objective for many pension funds–they will be well protected from possible, future tail-risk events. However, to reach the "promise land" of de-risking, plans must be fully funded and their funded status volatility must be minimized. For underfunded plans, which include most U.S. pension funds, expeditiously reaching a fully-funded position requires large contributions. Despite the market rally since 2008 and significant sponsor contributions, most plans have yet to see any improvement in their funded ratios. Based on Goldman Sachs's estimates, the aggregate funded status for the DB plans of S&P 500 companies as of mid 2012 was around 79%, essentially unchanged from year-end 2008.

Plan sponsors that are well positioned to make the significant contributions required to close current funding gaps must decide whether it is an optimal use of cash or borrowing capacity at this juncture. With the current yield on the BarCap Long Corporate Index at about 4.5%, fully de-risking with corporate bonds at the current juncture would require a significant haircut in expected return for most plans. Correspondingly, attempting to mitigate liability risk fully at the present time with an LDI derivative overlay, such as swaps, would eliminate the possibility of benefitting from a reduction in the present value of liabilities due to prospective increases in bond yields.

Plans that are de-risking at a measured pace are leaving open the possibility that favorable market outcomes will do much of the heavy lifting required to reach a fully-funded position. Investment policies are becoming more conservative, but most plans still have considerable market exposure. For example, according to Aon-Hewitt, the average allocation to equities for S&P 500 DB plans at year-end 2011 was 48%, down from 61% in 2007. Over this same period, the average allocation to fixed income increased from 31% to 41%, and the allocation to alternatives increased from 8% to 11%.

We recognize that the path for de-risking selected by a given plan will depend ultimately on the risk tolerance of the plan sponsor and fiduciaries. In our opinion, however, the current mix of possible opportunities and risks make a convincing for case for underfunded plans to maintain some market exposure and to put some downside protection in place.

Interesting Case for Maintaining Some Market Exposure with Safety Net

Many DB funds--either due to market views or out of necessity–are, in fact, de-risking at a measured pace. The economic outlook and widely used valuation yardsticks for stocks and bonds seemingly support this strategy. The

most likely scenario, at least for the period immediately ahead, is that the global economy will remain on a modest-growth path. The consensus economic outlook calls for below-trend ~3.5% global growth in 2013. With the notable exception of 10-year trailing earnings that imbed two of the most severe recessions in history, most valuation metrics imply that stocks are fairly or attractively valued currently. For example, one-year trailing price-to-earnings ratios for developed and emerging market equities are significantly below their historical averages. And if the consensus outlook continues to unfold, corporate profits should be supported by a gradually expanding global economy.

At the same time, although central bank policies are likely to suppress bond yields over the near to intermediate term, negative real yields are not likely to persist indefinitely (e.g., 10-year Treasury yields are currently below the Fed's projected long-run 2% inflation rate). Thus, in the absence of a deflationary scenario, U.S. government and core European bond yields should rise at some point, reversing some or all of the recent increases in the present value of liabilities due to declining rates.

It should be noted, however, that the consensus economic forecast imbeds some critical, albeit reasonable, assumptions (e.g., Europe steers clear of a disorderly Euro breakup; the U.S. navigates around the so-called fiscal cliff; China avoids a hard landing). If any of these "outliers" materialize, the markets would be susceptible to another tail- risk event.

Pivotal Issues

Many sponsors of underfunded plans are no doubt currently grappling with the following pivotal questions: Should they leave their fund in a position to benefit from potentially favorable market outcomes? Or, should they limit downside risk and forego these seeming opportunities? Tail-risk hedges, in our opinion, could be of particular interest for plan sponsors who are considering de-risking glide paths that could leave their funds exposed to significant market risks for several years. In the period ahead, the most likely outcomes appear favorable, but the possibility of an Armageddon scenario cannot be fully discounted.

Cost-Effective Indirect Hedge/Illustrative Trades

Direct-downside protection vehicles, such as put options and long-volatility strategies, can provide effective protection against tail-risk events, but the costs of maintaining these direct strategies may erode their potential benefits. Based on recent prices, buying a 10% out-of-money, one-year put on the S&P 500 would cost ~ 500 basis points–a performance drag that few plan sponsors can bear. Skilled tail-risk hedge managers, however, should be able to construct affordable, synthetic or indirect hedges that can provide considerable protection and maintain liquidity in times of stress. For example, the TED spread (three-month LIBOR rate minus three-month Treasury-bill rate) was only 20 basis points in early 2007. This spread widened to over 300 basis points in the wake of the Lehman bankruptcy in the fall of 2008, enabling investors to benefit from the sharp jump in risk premiums without incurring the high cost of equity puts or long VIX positions.

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Attributes of Good Tail-Risk Hedge Strategy/Manager

A talented tail-risk hedge manager will be able to filter the investible universe (fixed income, equity, foreign exchange, and commodities) continually to assess the optimal vehicle to implement a hedge at a given point in time. Diversity of strategy is also critical. The successful tail-risk hedge manager will construct a portfolio that employs a diverse set of strategies that in times of stress maintain liquidity and benefit from possible market dislocations. Most importantly, a skilled manager will subject their tail-risk hedge portfolio to vigorous stress tests to assess that it meets its liquidity and protection objectives in times of crisis.

Bringing It All Together

Many underfunded DB plans are following de-risking glide paths that leave them well positioned to benefit from possible favorable market outcomes. In fact, based on the consensus economic outlook and most equity and bond valuation metrics, there is a reasonable chance that rising equity prices and/or bond yields will do much of the heavy lifting in closing current funding gaps. At the same time, recent events and a number of identifiable macro risks suggest that tail risks should not be ignored.

We believe that skilled and disciplined tail-risk hedge managers can construct portfolios that are likely to meet the protection and liquidity objectives of many DB investors without subjecting their portfolios to a significant drag on performance.

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