IQ INSIGHTS

Dynamic De-risking—Avoiding the Pitfalls of a Static Investment Policy

by Yimin Huang, CFA, CAIA, Senior Portfolio Manager, Investment Solutions Group

Most corporate defined benefit pension plans saw their funded status deteriorated significantly in 2001–2002 and again in 2008. Despite historic improvement in 2013, the plans remain well underfunded on a PBO (Projected Benefit Obligation) basis with their funding ratios still considerably below the levels reached in 2007. Facing a big funding gap and the need for large contributions, many plan sponsors wonder what went wrong and what needs to be done to prevent the sharp deterioration of funded status from happening again.

As we work with plan sponsors to re-examine their asset allocation in an asset-liability framework, we often come to the same conclusion—there’s too much risk i.e. funded status volatility. While shifting assets from equities to fixed income generally reduces funded status volatility, plan sponsors fear that they may have to lock in losses and make more contributions in the future.

In addition, higher allocation to fixed income generally leads to a lower expected rate of return on assets, which in turn may have a negative impact on a company’s financial statements. Thus, how to reduce risk without significantly affecting the asset return creates a challenge to plan sponsors.

Missed Opportunities

Many corporate pension plans have reached overfunded status at least twice in the past 15 years—before 2001 and in 2007 as shown in Figure 1. However, in both instances, most plans’ funded status subsequently deteriorated significantly due to weak equity markets and falling discount rates among other reasons. Had they been de-risked while well funded, the plans could have fared differently in the ensuing down markets.

While there are many reasons why plan sponsors missed the de-risking opportunities in the past, we believe a static, asset-centric investment policy is likely the most common one. Traditionally, plan sponsors have adopted an asset-centric approach, relying on the long-term view of the risk/return profile of the asset classes to develop their investment policy. Asset mixes are typically dominated by equities and remain static for 3 to 5 years.
We believe such a static approach fails to recognize the changing risk appetite and return objectives of a plan sponsor as the plan's funded status improves, resulting in missed opportunities to de-risk the plan at more opportune times. This unfavorable experience highlights the need for an asset allocation framework flexible enough to accommodate such changes without losing a long-term view.

**Dynamic De-risking Explained**

A solution to the issues caused by a static investment policy, dynamic de-risking offers plan sponsors a disciplined framework to help define and target a desired outcome and provides them with a roadmap to get there. To achieve this, plan sponsors execute a “flight path,” an investment strategy to capitalize on risk-reduction opportunities as they arise.

Dynamic de-risking is a flexible asset allocation and risk management framework. In this framework, an asset portfolio follows a “flight path” down the pension return/risk spectrum and becomes incrementally more conservative and better correlated with the plan’s liabilities as the funded status reaches pre-defined triggers, a shift that may help to preserve gains in funded status and reduce funded status volatility. By establishing a flight path with triggers based on funded status, a dynamic de-risking approach may effectively link the risk of a pension plan to its funded status. It may also help to align the asset allocation decision with the changing risk and return objectives over time and thus results in more prudent and effective risk management and plan governance.

We have seen dynamic de-risking gaining popularity and being adopted by more and more plan sponsors in recent years. According to a 2014 survey by Aon Hewitt, “At the beginning of 2014, 22% of sponsors will have a glide path policy, up from 18% last year. By the end of 2014, the number is expected to climb to 30% and challenge the traditional portfolio as the most common investment policy.”

**The Flight Path**

The core of a dynamic de-risking solution is an asset allocation flight path, which guides a plan toward achieving a target funded status. The flight path includes a set of triggers, each corresponding to a pre-defined funding level. The asset allocation shifts to a more conservative mix as the funded status hits a trigger, until it eventually reaches the target funded status.

Under this approach, assets are classified into two categories—growth assets and hedging assets. Growth assets typically include asset classes that seek to provide above-liability returns such as equities and alternatives. On the other hand, hedging assets typically include asset classes that have high correlation with liability such as long duration fixed income assets. Plan assets are moved from the growth portfolio to the hedging portfolio as a plan shifts to a more conservative mix, as illustrated in Figure 2.

**Developing a Flight Path Typically Includes:**

- **Defining the starting and ending points of the flight path.** This step involves careful assessment of a plan’s current status and objectives. The starting point denotes the funding level when the plan will begin to de-risk, while the ending point is dependent upon the goals of the plan.

- **Identifying trigger points along the path and establishing asset mix at each trigger point.**
  The trigger points define the funding levels at which the asset portfolio shifts to a more conservative allocation.

  The asset mixes are optimized in an attempt to provide the desired risk/return tradeoff for the corresponding funding level, based on the risk/return assumptions. The portfolios need to be carefully constructed to achieve effective diversification as well as desired interest rate and discount curve exposure.

- **Conducting rigorous, forward-looking analyses to examine the effectiveness of the flight path.**
  These analyses typically incorporate a variety of market conditions that affect both assets and liabilities. We believe an econometric approach that incorporates yield curve shifts generates more realistic outcomes than a parametric approach, which is based on mean/variance assumptions.

  Back testing may also be conducted to show the results as if the solution had been implemented in the past, and it may reveal issues that need to be investigated further. However, the de-risking solution should not be based solely on back testing, nor should back testing results be taken as an indication of future performance.

**Figure 2: Sample Dynamic De-risking Flight Path**

![Sample Dynamic De-risking Flight Path](image-url)

Source: State Street Global Advisors (SSGA). For illustration purposes only.
The EROA Dilemma

Many plan sponsors understand the benefits of a dynamic de-risking flight path approach but worry about the potential negative impact on their financial statements, specifically regarding expected return on plan assets (EROA). As a trigger is achieved, the asset mix gets more conservative, and the EROA will likely be revised lower, everything else being equal.

It is true that a flight path is expected to lead to lower EROA in percentage terms as funded status improves. However, the asset base, the other part of the equation, will increase at the same time. If a flight path is carefully designed, the negative impact by a lower EROA may be offset by a larger asset base as illustrated in Figure 3.

In this example, the EROA gradually decreases from 7.75% to 6.25% as the funded status improves from 80% to 110%, reflecting more conservative mixes. In the meantime, plan assets grow from $200 million to $275 million, assuming a constant liability value of $250 million. As a result, expected return on plan assets in dollar terms actually increases by $2.7 million over time.

The Low Interest-Rate Environment

Although having rebounded from the 2012 summer lows, pension plan discount rates, as measured by the Citigroup Pension Liability Index, are still at a very low level from a historical perspective as shown in Figure 4. There appears to be a growing expectation of higher rates in the future, partially aided by anticipated changes in monetary policy. As a result, we have seen many plan sponsors who want to reduce risk by extending asset duration or adding to fixed-income assets are hesitant as such a strategy is likely to underperform if rates rise.

While the timing, magnitude and pace of a rate rise are up for debate and merit another discussion, we believe having a de-risking plan in place is still the best solution for plan sponsors in a waiting game. It is common for a plan sponsor to take a few months to have a dynamic de-risking plan established, approved and implemented. Such a long process may lead to another missed opportunity as funded status can change rather quickly. Even without repositioning the asset portfolio at the beginning, having a plan in place will help avoid the delay in action and capture the de-risking opportunities as they emerge.

From a market perspective, we believe that improving funded status generally can be attributed to either growth asset outperformance or a higher discount rate (lower liability value), or most likely, a combination of the two. In our opinion, the dynamic de-risking approach, which shifts from the outperforming growth assets to the underperforming hedging assets, is akin to a buy-low-sell-high strategy. In addition, gradually adding to hedging assets as discount rates rise is consistent with de-risking without locking in a low rate.

Plan sponsors, who are concerned about an increase in discount rate and hope to maintain a low hedge ratio, may consider some adjustments to a funded status-based flight path:

1. Extend duration to capture yield premium while remaining interest rate risk neutral by reducing allocation to fixed income.
2. Incorporate de-risking triggers based on discount rates to capture the mean reversion in discount rates.
3. Adopt a tactical approach to take advantage of valuation disconnects and a more flexible structure to adjust duration exposure when opportunities rise.

Figure 3: Impact of Return Assumptions

<table>
<thead>
<tr>
<th>Funded Status</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
<th>110%</th>
</tr>
</thead>
<tbody>
<tr>
<td>EROA</td>
<td>7.75%</td>
<td>7.25%</td>
<td>6.75%</td>
<td>6.25%</td>
</tr>
<tr>
<td>MV of Assets ($M)</td>
<td>200</td>
<td>225</td>
<td>250</td>
<td>275</td>
</tr>
<tr>
<td>Expected Return on Plan Assets ($M)</td>
<td>15.50</td>
<td>16.31</td>
<td>16.88</td>
<td>17.19</td>
</tr>
</tbody>
</table>

Source: SSGA. For illustration purposes only.

Figure 4: Citigroup Pension Liability Index

Source: Citigroup.
A Case Study

Take a hypothetical pension plan as an example. This is a mature plan that has just been frozen. Hence, no additional benefit accruals will be earned. Plan assets are invested in indexed strategies covering major asset classes. The plan sponsor is aware of the gap in interest rate exposure and has taken a step to address the issue by investing 50% of the fixed-income assets in a Long Government/Credit strategy.

Creating a Hedging Portfolio

Since pension liabilities are discounted with high-quality corporate bond yield, we believe it makes sense to use high-quality corporate bond strategies as the core of the hedging portfolio. In the example shown in Figure 7, we use investment-grade credit strategies as a proxy and supplement them with high-yield bonds to enhance yield and long Treasury STRIPS (Separate Trading of Registered Interest and Principal Securities) to manage duration exposure. Long Treasury STRIPS may also serve as a hedge against equity downside risk and a liquidity provider.

Creating a Growth Portfolio

A growth portfolio should be constructed with the liability in mind. Typically growth assets are by far the largest contributors to risk, therefore, emphasis should be given to assets with lower volatility and higher correlation with the liabilities. Additional asset classes may also be considered for diversification and inflation hedging purposes. In our opinion, risk adjusted return and tracking error versus the liabilities are key for a growth portfolio.

In addition, we extend the duration of the portfolio to be in line with the liabilities and reduce the allocation to fixed income by 7%. These moves help keep the interest rate exposure of the plan, as measured by the hedge ratio, essentially unchanged while improving yield and expected return, in addition to lowering tracking error versus the liability.
Putting It Together

Now we can combine the hedging and growth assets to create a total portfolio solution as shown in Figure 9. This portfolio allocates 67% to growth assets, 7% more than the current allocation. On surface it is more aggressive. However, as we introduce new asset classes and reallocate among the existing ones, we believe the portfolio can achieve a lower tracking error and lower funded status volatility with a higher expected return. As a result, it is more “capital efficient” and can serve as the starting portfolio of the dynamic de-risking flight path.

We use a simplified flight path that starts de-risking at 90% funded and ends at 110% funded with a 5% increment between trigger points as shown in Figure 10. The split between growth and hedging assets starts at 67/33 as a “capital efficient” portfolio. When the funded status reaches 90%, the split shifts to 60/40. As funded status improves, the plan de-risks as assets continue to move from the growth portfolio to the hedging portfolio. When it reaches 110%, the plan will have de-risked to a split of 20/80. At this time, the plan sponsor can choose to continue to manage the plan as is, or start the termination process with relatively modest cost. In this analysis we incorporate a tactical asset-allocation strategy to complement the strategic nature of dynamic de-risking.

10-Year Forward-Looking Simulation

Results of a 10-year forward-looking simulation are shown in Figure 11. As expected, the dynamic de-risking solution is effective in protecting the downside and reducing contributions. Compared with the current allocation, it:

1. Achieves the same funded status at the median,
2. Improves the funded status by 7% in the pessimistic scenario (75th percentile) and 8% in the worst case scenario (95th percentile) with significantly lower contributions,
3. Lowers annual tracking error by 2.8%,
4. Lowers median cumulative contribution by $10.4 million, and
5. Lowers the volatility of the contribution by $2.7 million.

The improved results come with a sacrifice on the upside. The dynamic de-risking solution lags the current allocation by 14% in the optimistic scenario (25th percentile) and 43% in the best case scenario (5th percentile). However, we believe the significant upside brings little benefits to plan sponsors as there are very limited uses of large funding surpluses by most plans. In this particular example, the excise tax of 50% imposed by Congress in 1990 in addition to ordinary income tax will render the surplus unattractive when the plan is terminated. On the other hand, contributions will have to be made to recover the funding deficit if the plan falls back to underfunded status. In our opinion, this asymmetric payoff profile highlights the importance of downside protection and the advantage of a dynamic de-risking solution over a static approach.
Additional Considerations

Implementation
By laying out a strategic roadmap to achieve the target status, we believe a well-established dynamic de-risking solution helps expedite the decision-making process and capture de-risking opportunities that otherwise may have been missed. To make it effective, implementation should be streamlined and disciplined. However, execution does not necessarily have to be inflexible, as there are many variables that should be considered in the execution process, in addition to the migration of funded status.

As a complement to the strategic nature of dynamic de-risking, a tactical asset-allocation approach may be incorporated in the process. Tactical asset-allocation explores shorter-term valuation disconnects based on current market prospects and can add value without hampering the long-term effectiveness of a dynamic de-risking solution.

Monitoring
While asset information is normally available on a daily basis except for illiquid assets, liability monitoring poses challenges for plan sponsors, as the funded status is often calculated only once a year and is reported with significant lag. As dynamic de-risking continues to evolve, we have seen a variety of solutions for liability monitoring and modeling made available to plan sponsors. To make a dynamic de-risking solution more effective, a plan’s funding level needs to be monitored more frequently. Frequent monitoring may add value as long as it is practical, and its cost is reasonable.

Conclusion
We believe dynamic de-risking provides an asset allocation framework that takes risk off incrementally as a pension plan’s funded status improves. Adopting a dynamic de-risking approach helps to align an investment strategy with changing objectives and results in more prudent risk management and plan governance. Our analysis shows that the dynamic approach is effective at downside protection and reducing contributions over the long term—the two key areas plan sponsors typically focus on.

The design of the flight path lies at the core of the Dynamic de-risking approach. A thoughtful design not only provides a clear roadmap to the target status but may also mitigate the impact on financial statements from a practical standpoint. In addition to the design of a flight path, implementation and monitoring are also integral components of the process and are equally as important to the success of the approach.

1 2014 Hot Topics in Retirement, page 30, AON Hewitt.
IQ Insights | Dynamic De-risking—Avoiding the Pitfalls of a Static Investment Policy

The views expressed in this material are the views of Yimin Huang through the period ended November 30, 2014 and are subject to change based on market and other conditions. The information provided does not constitute investment advice and it should not be relied on as such. All material has been obtained from sources believed to be reliable, but its accuracy is not guaranteed. This document contains certain statements that may be deemed forward-looking statements. Please note that any such statements are not guarantees of any future performance and actual results or developments may differ materially from those projected. Past performance is not a guarantee of future results.

Citigroup Pension Liability Index is a single equivalent discount rate that would produce the same present value as calculated by discounting a standardized set of liabilities using the Citigroup Pen-sion Discount Curve, which is a set of yields on hypothetical AA-rated zero coupon corporate bonds with maturities ranging from 6 months to 30 years.

Expected Return on Plan Assets (EROA) is an assumption used to determine the expected return on assets during the plan year. This assumption reflects the average rate of earnings expected on current and future investments to pay benefits. It is only used for U.S. GAAP pension accounting.

Projected asset return and tracking error based on 10-year forward looking simulation. The simulated performance shown was created by the SSGA Investment Solutions Group. The model projects a series of simulated asset and liability return paths over a 10yr period. Liability cash flows and projected returns are based on sample plan liability cash flows discounted by simulated Corporate Bond yields. Asset level returns are based on expected returns, volatility and correlations among asset classes. The results shown do not represent the results of actual trading using client assets but were achieved by means of the forward looking application of a model. The simulated performance does not represent the actual investment decisions of the advisor. These results do not reflect the effect of material economic and market factors on decision-making.

The simulated performance data is reported on a gross of fees basis, but net of administrative costs. Additional fees, such as the advisory fee, would reduce the return. For example, if an annualized gross return of 10% was achieved over a 5-year period and a management fee of 1% per year was charged and deducted annually, then the resulting return would be reduced from 61% to 54%. The performance includes the reinvestment of dividends and other corporate earnings and is calculated in USD.

The simulated performance shown is not necessarily indicative of future performance, which could differ substantially.

Investing involves risk including the risk of loss of principal.

Risk associated with equity investing include stock values which may fluctuate in response to the activities of individual companies and general market and economic conditions.

Standard & Poor’s (S&P) S&P Indices are a registered trademark of Standard & Poor’s Financial Services LLC.