One of the most talked about themes among pension plan managers over the last several years has been the de-risking of their portfolios, with a primary focus on interest rate risk. And for those who have implemented a glide path approach, there are other significant risks to consider. We believe that the biggest risk is valuation risk: the risk of loss that is realized when expensive assets revert to fair value. This risk is critically important today as we believe stocks and bonds are expensive globally. In this piece, we introduce a measure of valuation risk, and demonstrate how rotating growth assets into a valuation-aware dynamic strategy can help to reduce risk, improve long-term returns, and help improve funded status in the case of a reversion to the mean.

De-risking goes beyond interest rate risk

Many institutional plan sponsors are no longer comfortable with underwriting the risk of a pension plan. For corporations that are required to contribute a portion of any shortfall on an annual basis, the volatility on the balance sheet is not simply the price volatility a long-term investor can withstand; it is a real business risk. Many corporations believe this risk is insufficiently compensated. For some, that means off-loading the pension risk entirely by offering lump sums to beneficiaries or selling the plan to an insurance company. While these solutions are featured frequently in the financial news, most plan sponsors intend to continue to manage their plans, but to de-risk.\(^1\)

Even with the drop in funded status in 2014 (see Exhibit 1), many sponsors continue to talk about de-risking and a desire to minimize funded status volatility.\(^2\)

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\(^1\) aiCIO Liability Driven Investing Survey, 2013.

\(^2\) According to the 2013 aiCIO Liability Driven Investing Survey, 89% of pension plans have some sort of liability solution in place, while 72% utilize a formal glide path, providing a blueprint for how to de-risk going forward.
De-risking Goes Beyond Interest Rate Risk
March 2015

Exhibit 1:

There are many ways to implement an interest rate hedging solution, including the use of a variety of synthetic options that are capital-efficient. However, in the most straightforward implementation, the pension plan sponsor trades off between growth assets (for example, equity) and liability hedging assets (typically long duration fixed income) as illustrated by the simplified glide path in Exhibit 2. The more the assets look like the liability, the lower the surplus volatility and the lower the probability of a significant change in funded status.

Exhibit 2:
Glide Path to Reducing Interest Rate Risk (illustrative and simplified example)

³ Towers Watson calculations based on companies’ 10-K annual reports filed with the Securities and Exchange Commission.
Beyond duration risk: remember valuation

Within this mindset of reducing uncompensated risk in a pension plan, sponsors should consider whether they are sufficiently compensated for other plan risks, namely, the risk we focus on the most at GMO: valuation risk.

Valuation risk is the risk of overpaying for an asset. We believe it is the biggest risk faced by investors: buying expensive assets can doom an investor to low long-term returns or the permanent impairment of capital (see Exhibit 3).

Exhibit 3:
Value Has Been the Best Predictor of Future Returns

As of 12/31/14
Source: Global Financial, Shiller, GMO


Many investors claim that it is too hard to “time the market”; while they may fear valuation risk, they believe there is nothing they can do about it. These investors maintain a reasonably static asset mix through time. We agree that it is difficult to time the market. However, with the long investment horizon provided by retirement assets, a solid valuation framework, a willingness to reallocate assets, and patience, we believe that investors can use valuation to drive better investment outcomes.

How does one measure valuation risk and assess whether it is sufficiently well compensated?

GMO has developed proprietary 7-year asset class forecast returns that are comprised of two parts: an equilibrium return (the return to the asset in the absence of any valuation change) and a valuation return. To develop the valuation return, we assume that asset prices revert to long-term equilibrium levels linearly over seven years. The valuation return can be positive (if assets are cheap, or priced below long-term equilibrium levels) or negative (if assets are expensive and are priced above long-term equilibrium levels).

While there is not a universally accepted measurement of valuation risk, one way to proxy it is to calculate the amount an asset stands to lose from an immediate reversion to fair value. This metric is a nice way to capture aggregate valuation risk. On our data, all assets (except for cash) currently stand to fall if they revert immediately to fair value (Exhibit 4). Conversely, if assets were priced cheaply, they would have a gain from reversion to fair value.
How does one reduce valuation risk in a pension plan? By monitoring asset valuations and rotating out of the most overpriced assets and into the most attractively priced assets. Easily stated, less easily implemented, but this is exactly what we do in our asset allocation strategies, using the 7-year asset class forecasting framework.

As risky assets today are almost uniformly expensive, investment portfolios are carrying a significant amount of valuation risk. As of December 31, 2014, the valuation risk (loss from reversion to fair value) of a globally market capitalization weighted equity portfolio (similar to the MSCI All Country World Index) is estimated to be -32%. The valuation risk of cash, a low duration asset (cash can have a maturity anywhere from overnight to three months), is 0%. A change in the cash rate would have little impact on the value of the cash held currently; as cash assets are rolled forward, they begin earning the new cash rate. However, over a long horizon holding cash is a risky strategy due to inflation risk; specifically, the value of cash holdings is eroded by inflation.

The valuation risk associated with a GMO asset allocation strategy is -11%. The strategy bears some valuation risk – but significantly less than a global market capitalization weighted equity portfolio – by targeting the most attractively priced pockets of risky assets. Some expensive risky assets still have a positive forecasted return because the equilibrium return (growth and dividends for equities and yield and roll down for fixed income) offsets the expected drag from valuation. We would prefer to invest in cheap or fairly valued assets; when none are available, we seek to earn some return while waiting for mean reversion to occur.

In Exhibit 5, we provide a simplified example for how a dynamic asset allocation strategy could be incorporated into a broader de-risking glide path. By substituting a portion of the existing risky asset portfolio (here assumed to be global equities) with the dynamic asset allocation strategy, and over

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4 Duration is the sensitivity of an asset’s price to a change in rates; low duration assets have low valuation risk.

5 Based on GMO’s Benchmark-Free Allocation Strategy as of December 31, 2014.
time de-risking out of equities first, and then out of the dynamic asset allocation strategy, the investor may be able to reduce the valuation risk of the remaining growth portfolio.

**Exhibit 5:**

Glide Path to Reducing Interest Rate Risk and Valuation Risk (illustrative and simplified example)

Source: GMO

*Valuation risk is expressed as loss from immediate reversion to fair value (see Exhibit 4). Risky assets include the Growth Assets and Dynamic AA Strategy. This illustration assumes that Growth Assets are a global equity portfolio and Dynamic AA is a GMO asset allocation strategy.

Just as reducing the interest rate risk associated with the liability reduces surplus volatility (therefore the likelihood of a significant fall in funded status), a growth portfolio that is more sensitive to current valuation may have a meaningful impact on funded status in a mean reversion scenario as we demonstrate in the illustrative example provided in Exhibit 6.

**Exhibit 6:**

Impact of Reversion to Fair Value on a Simple Asset – Liability Portfolio (illustrative example)

<table>
<thead>
<tr>
<th>Assets: $80</th>
<th>Liability: $100</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hedging Assets (Bonds)</strong> 40%</td>
<td><strong>Liability</strong> 100%</td>
</tr>
<tr>
<td><strong>Growth Assets (Stocks)</strong> 60%</td>
<td></td>
</tr>
</tbody>
</table>

| Starting value | $80 | $100 | $-20 | 80% |
| Immediate reversion to Fair Value | -29% | -26% |
| Ending value | $57 | $74 | $-17 | 77% |

Source: GMO
The example pension plan is 80% funded. The liability has duration of approximately 13.5\(^6\) years and the hedging assets have duration of approximately 11.7 years.\(^7\) Credit risk of both the liability and fixed income assets is ignored for simplicity. The growth assets are assumed to be invested in a globally diversified equity portfolio like MSCI All Country World Index (ACWI); again, this is a simplification as many plans will also have alternatives as part of their growth portfolio.

We consider a scenario in which all assets revert immediately to fair value. This unlikely scenario\(^8\) illustrates the potential impact of mean reversion on surplus and funded status. Bond yields are currently low;\(^9\) if they revert quickly to long-term norms, bond prices will fall. The estimated loss for instantaneous reversion to fair value is roughly -26\% for a bond with duration of 13.5 years, meaning that the liability would shrink by 26\%,\(^10\) improving funded status, all else equal. The assets would also suffer a loss to fair value: an estimated -32\% for a global equity portfolio and -23\% for a bond portfolio with duration of 11.7 years.\(^11\) The overall loss to the assets would be approximately 29\%. The impact on the dollar deficit is slightly positive; both assets and liabilities have decreased, and the deficit has reduced by 10\%. However, the funded status has fallen from 80\% to 77\%.

In Exhibit 7, we consider an identical pension plan that, instead of investing the growth assets in equities, invested the growth assets in a dynamic asset allocation strategy. The dynamic asset allocation strategy takes a valuation-based approach and therefore has less valuation risk; the loss from a reversion to fair value is -11\% rather than -32\% for a global equity portfolio. Therefore, the assets overall are reduced by 16\% in this scenario. This causes a two-thirds reduction in the deficit (from $20 to $7) and an improvement in the funded ratio from 80\% to 90\%.

Exhibit 7:
Investing the Growth Assets in a Dynamic AA Strategy; Impact of Reversion to Fair Value (illustrative example)

Source: GMO

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\(^6\) The average liability duration is 13.5 years (aiCIO Liability Driven Investing Survey, 2013).

\(^7\) The average duration of pension’s fixed income assets is 11.7 years (aiCIO Liability Driven Investing Survey, 2013).

\(^8\) Mean reversion can happen over a relatively short horizon, but almost never instantaneously; and it is quite unlikely that all assets would revert exactly to fair value over the horizon.

\(^9\) Yields of the U.S. 10-year and 20-year Treasury are 2.2\% and 2.5\%, respectively, as of December 31, 2014.

\(^10\) This assumes a yield of a bond with approximately 13.5 years of duration of 2.4\% and a terminal yield of roughly 4.6\%.

\(^11\) This assumes a current yield of a bond with 11.7 years of duration of 2.3\% and a terminal yield of a bond of roughly 4.6\%. 

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With a standard (equity-based) growth portfolio, mean reversion across all assets would impair funded status. Taking a valuation-centric approach to the growth assets turns this scenario around; mean reversion actually causes an overall improvement in funded ratio.

**Conclusion**

Corporate pension plans in the process of de-risking by reducing interest rate risk may also want to re-evaluate the other investment risks they bear, in particular, valuation risk. How much valuation risk is embedded in the growth assets? Is the plan adequately compensated for that risk?

If the investor reduces valuation risk by rotating into cash or cash-like assets, the forecasted return of the growth portfolio will fall meaningfully as cash currently has a negative forecasted return. A valuation-based dynamic asset allocation strategy could help to reduce valuation risk and mitigate the impact of a mean reversion scenario on funded status, while maintaining the ability to generate a positive real return.

Some fully immunized plans will continue to maintain a growth portfolio (e.g., a pension plan that makes use of synthetic immunization, an overfunded plan, etc.), perhaps to improve funded status, reduce future contributions, or, in the case of an non-frozen plan, simply keep up with service costs. In this case, we believe a dynamic asset allocation strategy that seeks to achieve an absolute return goal (e.g., CPI + 5% over a complete market cycle) is a sensible solution for the growth portfolio. Once the liability is immunized, the investment problem looks like the investment problem of an endowment (or another investor who focuses only on the asset side of the balance sheet): achieve a sufficient absolute return to meet the institution’s objective without bearing undue risk.

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