Dynamic Risk Management

Outperform the strategic asset allocation and reduce portfolio risk whilst driving returns and reducing the funding gap.

Why consider Dynamic Risk Management?

- **Investment risk**: financial repression and central bank policy have driven bond yields (discount rates) to historical low levels and liabilities to historical high levels – there is now an asymmetry of concentrated investment risks to manage
- **Cost**: traditional LDI strategies offer no protection for diversified growth assets – hence hedging liabilities has become extremely expensive
- **Reliability**: during periods of market stress diversification benefits are reduced as correlation between asset classes increases
- **Security**: sponsor covenants are the last line of defence – so what protects sponsor covenants in times of stress?

Dynamic Risk Management Strategy features

- Customised risk management solution, tailored to meet your specific investment requirements
- Integrated into your current strategic asset allocation without disturbing underlying assets or managers
- Ideally suited to underfunded and funded pension funds seeking to reduce deficits – aligned with stakeholder interests to provide greater protection
- Limits downside risk while maintaining upside participation
- Addresses the limitations of other risk management strategies without incurring the high cost of lowering future return expectations

Allianz Global Investors Dynamic Risk Management Strategy

- Designed and managed by AllianzGI Global Solutions and AllianzGI Multi-asset Portfolio Management teams with a proven track record in overlay management since 2005
- Over GBP 91 billion in mandates using active asset allocation and risk mitigation
- More than 1,000 protection levels have been safeguarded by the Multi-asset team without exception since 1997
- A trusted partner for clients across all major asset classes and regions
- Global presence with 24 locations worldwide and over 500 investment professionals*
- Local client servicing teams to build long-term relationships and deliver global capabilities

* Data as at March 2015
The need for risk management

Historically, UK pension schemes have predominantly relied on diversification as a means of providing downside protection. On average, and over the long term, such a strategy works well, but during periods of market turbulence, such as those evidenced in 2008 and more recently in 2011 and 2013, correlations of asset classes rise, and this protection fails to materialise.

The result is ultimately funding ratio volatility. The impact on funding ratio volatility can be unpalatable, particularly given the visibility on balance sheets, and is likely to be made more acute by IAS19 pension fund reporting guidelines. This often results in a knee-jerk reaction by schemes to de-risking portfolios, or to calls for a greater focus on pro-active total return risk management.

The uncertainty of macroeconomic and capital market regimes has led many to consider risk management solutions that can mitigate against sharp downside risks. Solutions that specifically focus on eliminating ‘tail risk’ events (such as 2008) from a portfolio’s returns.

As a funded pension arrangement, Local Government Pension Schemes (LGPS) have traditionally held a greater proportion of assets in riskier growth assets such as global equities, and less so in matching assets such as corporate and government bonds. As such, they are underweight duration relative to the liabilities, and are running a significant amount of risk, both in terms of funding level volatility and asset price volatility.

Negative performance can very quickly erode any previous positive returns. By reducing this risk, it puts the portfolio on the right path to benefit from the next bull market.

At Allianz Global Investors we understand that, by implementing a Dynamic Risk Management strategy, pension schemes can reduce portfolio downside risk whilst still participating in the upside growth i.e. delivering the strategic asset allocation return. Furthermore, it is even feasible to increase holdings in growth assets without increasing overall portfolio risk.

In this way the scheme is able to deal with two problems, reducing portfolio risk whilst at the same time increasing return expectations to help close the funding gap.

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**Figure 1, The evolution of risk management**

**Management Types**

- **Diversification**
  - Breaks down during times of crisis

- **CPPI**
  - Simple pro-cyclical rules
  - No link to SAA
  - High opportunity costs – lacking market re-entry

**Option-based Models**

- Expensive insurance
- Option premium is lost on average (Variance Risk Premium)

**Dynamic Risk Management**

- Taking into account all investment goals
- Management of risks and opportunities
- Pro and anti-cyclical asset allocation components
- Low cost
Dynamic Risk Management can effectively mitigate losses during periods of market stress by replicating a return profile similar to a put option strategy in a cost-effective manner.

Moving across the efficient frontier away from the strategic asset allocation, schemes will likely face one of the following problems: their portfolio has either too much risk or not enough return to meet pension obligations.

Our Risk Management Approach

Our goal is to deliver a superior return profile over a full market cycle, by adjusting the strategic asset allocation (SAA) whilst reducing downside risks in weak market phases. Our approach targets an asymmetric risk/return profile: minimising risk while maximising the potential for return.

Benefits of asymmetric risk/return profile:
1. Focus on downside risk protection: investors and sponsors feel losses more acutely than gains
2. Provides a smoother path to your investment goals: an asymmetric risk-return profile employing Dynamic Risk Management seeks to reduce portfolio volatility and create a smoother path by not underperforming the SAA
3. Increased potential to perform in the long run: by not losing in negative years, portfolios gain against the SAA i.e. a loss of -20% in year one requires a 25% return in year 2, a loss of -40% in year one requires a 67% return in year two. The more you lose in negative years, the more you have to make up to get back to where you were.
Under the bonnet

The superior absolute return profile of Allianz Global Investors’ Dynamic Risk Management strategy is the result of a proprietary, modular and active approach to allocation. This profile is obtained by dynamically adjusting efficient portfolios against the benchmark of the SAA. Over time, the dynamic asset allocation process exhibits the characteristics of a low cost put option with effective tail risk protection. It is also well known that the normal distribution curve that supports option pricing theory can also underestimate downside tail risk.

Systematic and quantitative risk management is key. We deploy a systematic risk-based approach to asset allocation according to your specifications.

Allianz Global Investors’ Dynamic Risk Management strategy is researched intensively on an ongoing basis by our team of experienced investment professionals. We apply a quantitative basis to risk that increases the reliability of the expected return profile.

The strategy is predicated on the belief that systematic, quantitative risk management solutions are preferable and superior to purely judgemental processes. Similarly, we believe that a dynamic, synthetic replication of option profiles is more cost-effective than buying static options themselves, while additionally providing the possibility of outperformance versus an SAA.
Cyclical components as a basis: the engineering

To generate the desired target profile, we offer a tailored Dynamic Risk Management strategy using active asset allocation adjustments over time, e.g., equity weightings, bringing together pro-cyclical and anti-cyclical components. This strategy adjusts the initial SAA according to either the absolute performance achieved or the funding ratio, and the available risk budget.

The pro-cyclical component increases the allocation to riskier growth asset classes, e.g., equities, in times of positive trending market performance, and reduces the allocation when performance is below the target return (money market return + long-term risk premium). Thus, in weak market phases following strong market returns, the active asset allocation approach will increase the safety of the portfolio by increasing the allocation to low-risk assets, and conversely increase the risk within the portfolio at times in the market cycle when risky assets are offering a higher risk premium.

Whilst markets do demonstrate trends, it can be observed that these trends tend to reverse in excessive markets. In those periods, the anti-cyclical component of the process is responsible for market re-entry in the event that markets drop significantly during short periods of time. Vice versa, after a sharp rise, the portfolio manager would reduce the overweight to risky asset classes (profit-taking) to lock in gains.

Using these two components, the Allianz Global Investors Dynamic Risk Management strategy results in an attractive absolute risk/return profile with respect to an absolute benchmark return, and also provides an advantageous relative risk/return profile, with respect to the static SAA.
Additional options
Fundamental Tactical Asset Allocation (TAA)
The TAA may be used in addition to the rules-based pro and
anti-cyclical steps to deliver additional uncorrelated returns,
and to better anticipate turning points in markets. The success
of TAA is, unlike the pro and anti-cyclical components, based
on short-term return forecasts. Like the first components, the
TAA is typically implemented directly in the segregated overlay
account via futures. TAA uses forecasts for the equity and bond
markets. If part of the underlying portfolio is exposed to other
asset classes such as commodities or emerging market
equities, the TAA employs the systematic and fundamental
analysis of:

• the economic cycle
• technical factors that are related to the risk aversion
  of investors
• the relative valuation of equities to bonds

If this TAA component is used within a risk management
overlay, we ensure that all resulting positions are compatible
with the risk budget defined for the mandate.

Total Return and Tail Risk Management
Another option is Total Return and Tail Risk Management.
This option in the investment process is designed to further
minimise downside risk. It is an ongoing monitoring process
that verifies the defined risk budget is not likely to be violated,
whether relative to absolute performance targets or funding
ratios. The explicit risk budget can also be defined with respect
to a pre-specified risk measure, e.g. VaR, CVaR, a confidence
level and a time horizon such as a 95% VaR limit focussed on
rolling 12-month protection or calendar years. This provides
flexibility to customise to your bespoke requirements.

The basis of the risk management process is the determination
of a desired portfolio based on your underlying strategic asset
allocation. The Value at Risk associated with this portfolio is
then assessed, using Extreme Value Theory, to determine
whether the risk budget would allow this allocation to be
implemented (relative to your agreed parameters and
guidelines on either an absolute or funding-relative basis).
Implementation: setting the wheels in motion

Customised risk management

The Allianz Global Investors Dynamic Risk Management strategy is an innovative and highly flexible investment solution that can be customised according to mandate-specific risk budgets and investment restrictions. It can be designed to achieve the following targets:

Risk target: to reduce the downside portfolio loss by up to 50% relative to the benchmark over rolling 12-month periods.

Return target: to meet or exceed the expected return of the SAA/benchmark or of the target return of the liabilities over a full market cycle.

We firstly seek to understand your specific risk/return, SAA and benchmark requirements. We act to define and agree a downside protection portfolio, and also offer scope to increase the growth portfolio risk relative to the SAA. This offers potential for outperformance with an improved/reduced overall risk budget. We do not interfere with the underlying portfolio managers.

- Risk management approach is embedded into the existing SAA/Asset Liability Matching (ALM) framework
- SAA or ALM-study builds the anchor for the risk management strategy
- Existing return assumptions are one of the inputs for the risk management strategy

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**Figure 6, How Dynamic Risk Management fits**

<table>
<thead>
<tr>
<th>Overall Portfolio Return</th>
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</thead>
<tbody>
<tr>
<td>Strategic Asset Allocation (SAA)</td>
</tr>
<tr>
<td>- Allocation to various asset classes to:</td>
</tr>
<tr>
<td>- capture long-term risk-premia</td>
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<tr>
<td>- benefit from diversification</td>
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<tr>
<td>- Risk is not actively managed</td>
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<tr>
<td>- LDI</td>
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<tr>
<td>Dynamic Risk Management</td>
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<tr>
<td>- Limiting downside risks while keeping upside participation</td>
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<td>- Systematic management of absolute portfolio risk to stabilise expected returns</td>
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<td>- High tracking error allowed due to allocation along the entire efficient frontier</td>
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<tr>
<td>- Smart use of risk budget</td>
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<tr>
<td>- Focus: robust return profile with high confidence</td>
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<tr>
<td>Alpha</td>
</tr>
<tr>
<td>- Over/underweighting of asset classes (TAA) or selection of individual securities with the aim to outperform a given benchmark</td>
</tr>
<tr>
<td>- Risk limits are defined in terms of tracking error</td>
</tr>
</tbody>
</table>

Who?

- Investment Advisor
- Allianz Global Investors Dynamic Risk Management selected by Investment Advisor
- Asset Manager
Dynamic Risk Management Overlay

Typically we implement Dynamic Risk Management by means of a portfolio overlay using the underlying SAA benchmark with synthetic instruments. A small percentage of the underlying portfolio is therefore required to create a completion/collateral fund. The overlay funding is used to change the economic exposure according to the strategy’s logic using very liquid, exchange traded instruments.

In the neutral positioning of the strategy, the overlay replicates the SAA, minimising any undue impact on the existing strategy. The required size of the completion/collateral fund depends on the risk of the underlying SAA. Typically, it should be large enough to run the overlay over one period (one year) without additional funding, so up to 15% might be considered an average indication.

**Figure 7, Funding the overlay**

The strategic asset allocation (with asset classes A, B and C) is typically implemented via asset management mandates covering the various asset classes.

When opting for a pro rata funding, each asset allocation (A, B and C) will be replicated in the overlay account to re-establish the strategic allocation after the funding.

In the focused funding case, a specific segment (e.g. Government Bonds or passive equities) will be replaced in the overlay account to re-establish the strategic allocation (e.g. segment A).
An integrated team of experienced specialists

Risk Advisory by our Global Solutions team
Allianz Global Investors’ Global Solutions division offers integrated solutions, such as Fiduciary Management and holistic DC solutions, tailored to our institutional clients’ sophisticated investment requirements. More than 80 professionals are dedicated to three core areas: investment and risk advisory, pensions and manager research & selection. These three core areas bring together our proven competencies in investment strategy consulting and analytics, strategic asset allocation, asset and liability management, risk management, pension investing and vehicles, as well as manager selection and volatility strategies.

Risklab GmbH is an integral part of Global Solutions. A dedicated team of 35 professionals form our centre of excellence for strategic investment and risk management solutions. For risk management solutions, qualitative insights and judgements are combined with the latest quantitative capital market research, supported by established partnership networks with leading universities, supranational organisations (e.g. the OECD) and first class industry partners (e.g. IBM – Algorithmics).

Professional portfolio management by our Multi-asset team
Allianz Global Investors’ multi asset portfolio management comprises a total of 78 dedicated portfolio managers and analysts. The team has a depth of proven investment and quantitative modelling experience and extensive complementary skills including equity, fixed income, currency, commodities, tail risk management, dynamic asset allocation, fiduciary management and capital protection.

The team is one of the European market leaders in innovative multi-asset solutions and manages over GBP 91 bn in mandates that use active asset allocation and risk mitigation. Within the multi asset protection team, more than 1,000 protection levels have been kept without any exception since 1997.

Data as at March 2015

Dynamic Risk Management Summary

With a long proven track record, our Dynamic Risk Management strategy demonstrates the following characteristics:

• Effective downside risk mitigation in bear markets
• High participation in bull markets
• Systematic market re-entry in V-shaped markets
• Anticipation of investment results and full transparency
• Seamless integration with the current investment strategy
Disclaimer

Investing involves risk. The value of an investment and the income from it could fall as well as rise and investors might not get back the full amount invested.

The volatility of fund unit prices may be increased or even strongly increased. Past performance is not a reliable indicator of future results.

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