CLWYD PENSION FUND

RISK MANAGEMENT FRAMEWORK MONTHLY MONITORING REPORT

August 2018

Paul Middleman FIA

OVERRIDING OBJECTIVES

Stable and affordable contribution rate

versus

Achieve returns in excess of CPI required under funding arrangements

Objectives are two-fold but conflicting

- Risk needs to be taken in order to achieve returns, but risk does not guarantee returns

Need to ensure a reasonable balance between the two objectives

- Do you need to take the same level of risk when 70% funded (say) as when 110% funded?

EXECUTIVE SUMMARY

= as per or above expectations = to be kept under review = action required

Overall funding position

- Ahead of existing recovery plan
- Funding level below the first soft trigger

In absolute terms the funding position is c.12% ahead of target. However there is continuing uncertainty in the outlook for future returns which could impact on the future funding requirements.

Liability hedging mandate

- Insight in compliance with investment guidelines
- Performed in line with the benchmark over Q1
- Hedge ratios marginally below target levels

No action required.

Synthetic equity mandate

- JP Morgan in compliance with investment guidelines
- Portfolio of total return swaps was sold during Q2 2018
- Dynamic equity protection structure now in place

The equity TRS mandate was closed out in May 2018, and the equity protection overlay was replaced with a new dynamic strategy.

Collateral and counterparty position

- Collateral within agreed constraints
- The Insight QIF can sustain at least a 1.25% rise in interest rates and fall in inflation, in combination with a 35% fall in equity markets and a 0.5% increase in z-spreads without eliminating all collateral

Collateral adequacy to be monitored quarterly. Potential to release collateral and this is being assessed based on the agreed collateral guidelines.

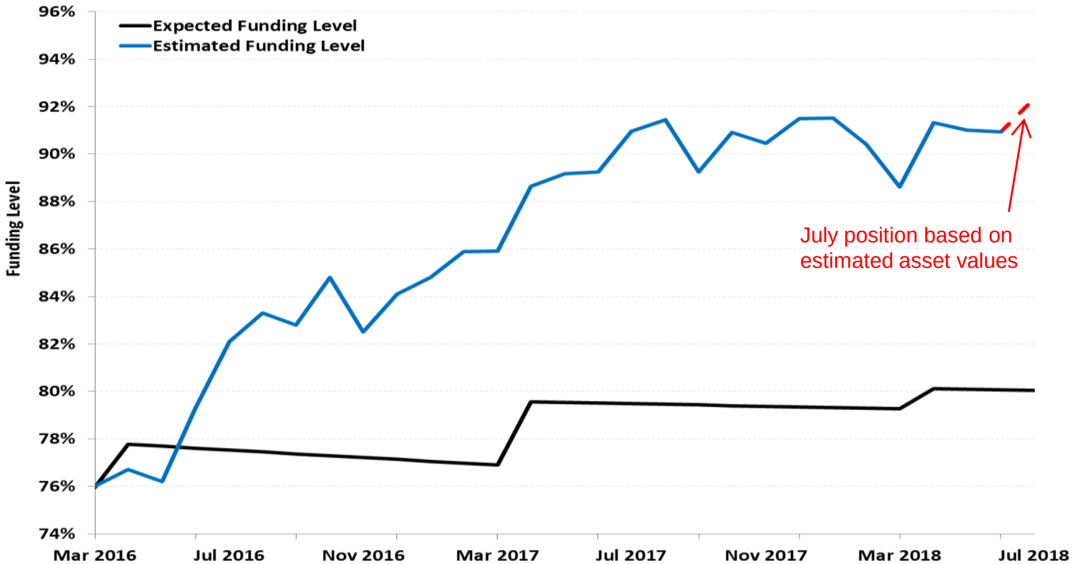
LIBOR Plus Fund

- Fund has underperformed its target over the quarter, but outperformed since inception
- Management team stable and no change in manager rating
- Allocation of £55m remains appropriate

No action required. Insight have placed a temporary limit on future investments into the Fund at any weekly dealing point - to be kept under review.

FUNDING LEVEL MONITORING TO 31 JULY 2018

Estimated funding position since 31 March 2016



The positions from April 2018 onwards have been adjusted to reflect the actual 2018 revaluation/pension increase awarded. Where applicable the above funding positions will be updated to allow for the results of the 2018 Interim Review once completed.

Funding Level Triggers

It was concluded at the FRMG on 20 June 2017 that the funding level is not currently sufficiently high to warrant de-risking in a traditional sense via a change in long term strategy.

It was agreed that a "soft" trigger will be put in place to prompt FRMG discussions regarding potential actions as the funding level approaches 100% on the current funding basis. This funding level will be monitored approximately by Mercer on a daily basis.

Comments

The **black line** shows a projection of the *expected* funding level from the 31 March 2016 valuation based on the assumptions (and contributions) outlined in the 2016 actuarial valuation. The *expected* funding level at 31 July 2018 was around 80%.

The **blue line** shows an estimate of the progression of the funding level from 31 March 2016 to 30 June 2018. The **red line** shows the progression of the estimated funding level over July 2018. At 31 July 2018, we estimate the funding level and deficit to be:

92% (£155m*)

This shows that the Fund's position was ahead of the expected funding level at 31 July 2018 by around 12% on the current funding basis.

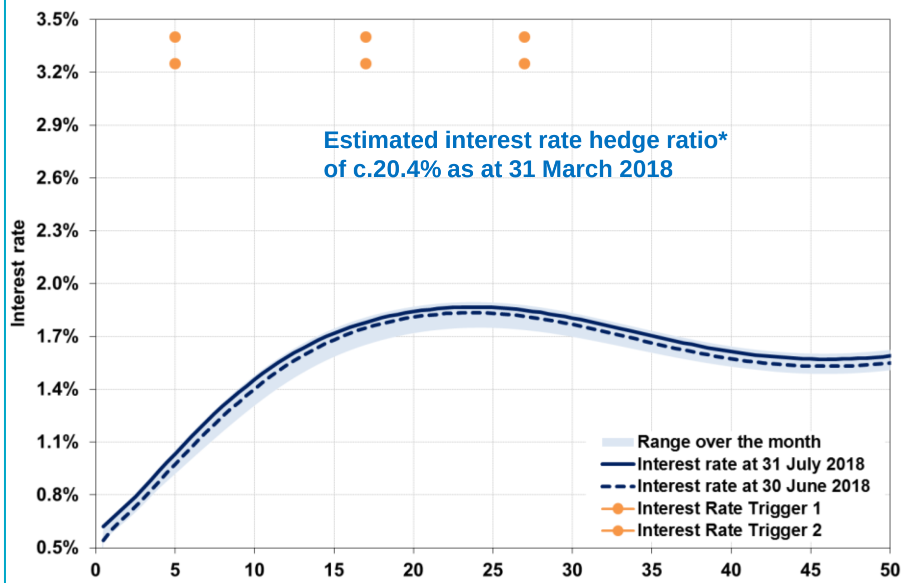
Uncertainty continues to be prevalent in the investment environment due to ongoing external political and fiscal factors. This could mean that the likelihood of achieving the assumed real returns going forward has fallen. To illustrate the impact, a reduction of 0.25% p.a. in the assumed future investment return/real discount rate would reduce the funding level by c.4% to c.88% with a corresponding increase in deficit of £94m to £249m.

This will be kept under review in light of changing market conditions.

**Asset values estimated based on market indices and an estimate of performance of the Insight liability hedging mandate from 30 June 2018 to 31 July 2018. We will monitor this estimate over time against the actual position once final asset values are available, and update the asset values on a monthly basis.*

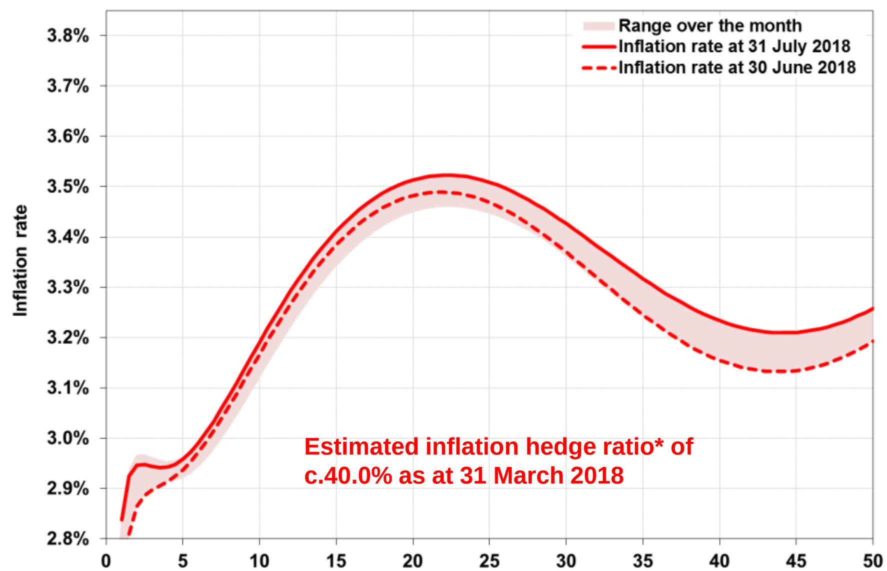
UPDATE ON MARKET CONDITIONS AND TRIGGERS

Change in interest rates



Date	Band 1	Band 2	Band 3	Band 4	Actual
31 March 2018	20.0%	20.0%	20.0%	20.0%	20.0%

Change in inflation rates (note: different scale)



Date	Band 1	Band 2	Band 3	Band 4	Actual
31 March 2018	40.0%	40.0%	40.0%	40.0%	40.0%

Comments

Interest rates rose fairly uniformly across the curve over July 2018, with average increases of c.0.05% observed.

Based on market conditions as at 31 July 2018, yields would need to rise by c.1.4% p.a. before the Fund would hit any of the revised interest rate triggers implemented by Insight in September 2017.

Comments

Inflation expectations rose at all durations over the month, particularly at the shortest and longest durations. The average increase observed was c.0.05%.

It has been agreed that Insight will not resume monitoring of the level of inflation hedging until the interest rate and inflation hedge ratios have been aligned.

** Hedge ratios calculated with reference to 2016 valuation cashflow analysis and relying on a discount rate of gilts + 2.0% p.a..*

UPDATE ON RELATIVE VALUE TRADE

Mark-to-market value of trade since inception

Note: no allowance made for yield improvement from the inflation trade (c.£10.2m over lifetime of the trade)

Comments

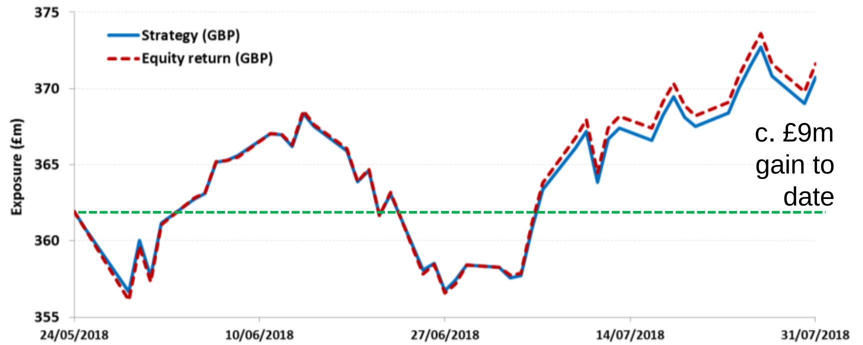
Insight estimated the potential net gain of the LDI restructure - implemented in Q1 2017 – would be c.£36.5m if held to maturity (c. 50 years). This gain would be accrued incrementally over the lifetime of the trade, assuming repo and swap funding costs offset one another.

The relative value trade (i.e. holding gilts and "selling" interest rate swaps) will experience a mark-to-market gain if the difference between gilt and swap yields ("z-spread") falls over time. The mark-to-market gain rose by c.£1.6m over the month as z-spreads fell across the curve over July 2018. The estimated gain was c.£18.6m as at 31 July 2018. In addition to this, a further c. £10.2m gain will be generated over the lifetime of the trade due to the yield pick up from holding gilt inflation relative to swap inflation, resulting in a total gain of £28.8m.

For risk management reasons and that c. 70% of the expected gain has been realised in 18 months, it has been agreed that the Fund will close out of the trade in the near future in order to crystallise this gain, and release collateral to be reinvested into other areas of the portfolio. We have provided separate advice in relation to this and are continuing to liaise with Insight regarding the logistics of exiting the trade.

UPDATE ON EQUITY PROTECTION MANDATE

Strategy versus equity index

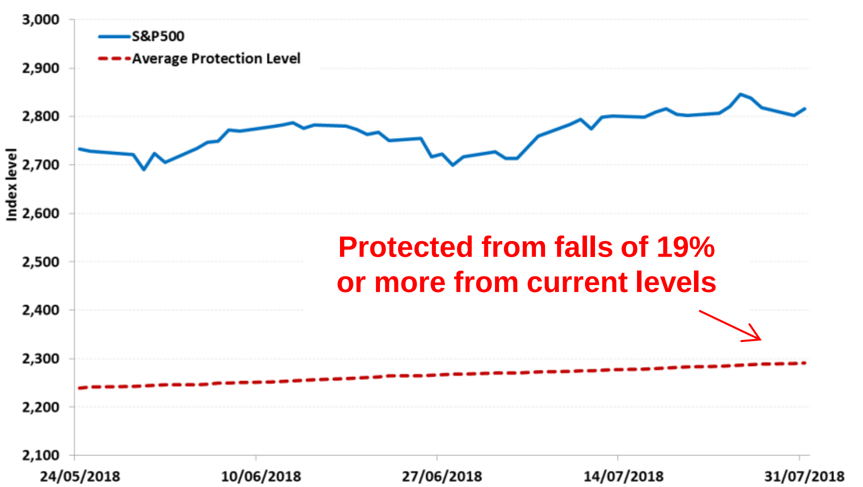


GBP returns	Equity return	Hedging return	Financing return	Costs	Overall return	Relative return
MTD	3.68%	(0.24%)	0.02%	(0.02%)	**3.44%**	**(0.24%)**
YTD	2.68%	(0.24%)	0.05%	(0.04%)	**2.44%**	**(0.24%)**

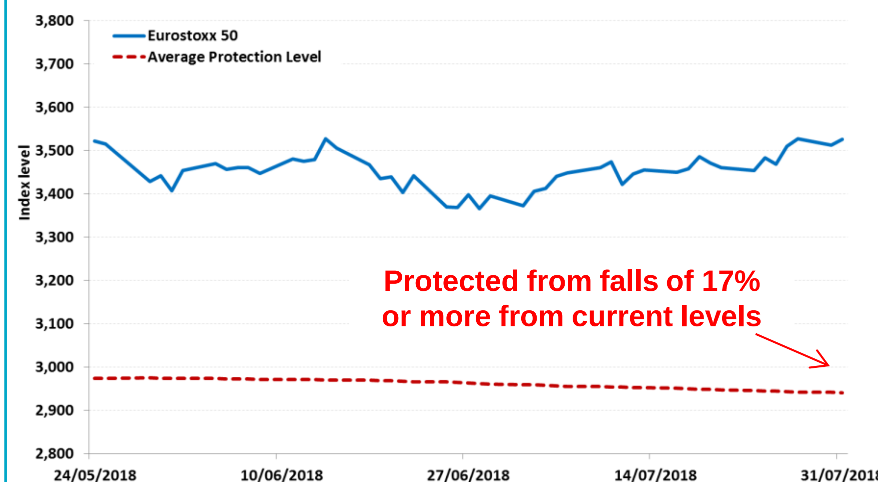
Comments

- The Fund implemented a dynamic equity protection strategy on 24 May 2018 with exposure of £362m. As at 31 July 2018, the value of the synthetic equity exposure had risen by £9m to £371m.
- Relative to investing in passive equities (with no costs), the strategy has underperformed by c. £0.9m since inception.
- The majority of this underperformance is due to the return drag from paying for hedging and the market being c.19% from the protection levels. If markets fall by this amount of more, the protection will kick in.
- This was partially offset due to collecting premium through selling upside, known as the financing return.
- The strategy rolls daily and therefore the protection changes over time to react to market changes.

US equity exposure



European equity exposure



GLOSSARY

- Actuarial Valuation - The formal valuation assessment of the Fund detailing the solvency position and determining the contribution rates payable by the employers to fund the cost of benefits and make good any existing shortfalls as set out in the separate Funding Strategy Statement.
- Collateral – Liquid assets held by the Fund as security which may be used to offset the potential loss to a counterparty.
- Counterparty – Commonly an investment bank on the opposite side of a financial transaction (e.g. swaps).
- Deficit - The extent to which the value of the Fund's liabilities exceeds the value of the Fund's assets.
- Dynamic protection strategy – Strategy to provide downside protection from falls in equity markets where the protection levels vary depending on evolution of the market.
- Equity option – A financial contract in which the Fund can define the return it receives for movements in equity values.
- Flightpath - A framework that defines a de-risking process whereby exposure to growth assets is reduced as and when it is affordable to do so i.e. when "triggers" are hit, whilst still expecting to achieve the overall funding target.
- Funding level - The difference between the value of the Fund's assets and the value of the Fund's liabilities expressed as a percentage.
- Funding & Risk Management Group (FRMG) - A subgroup of Pension Fund officers and advisers set up to discuss and implement any changes to the Risk Management framework as delegated by the Committee. It is made up of the Clwyd Pension Fund Manager, Pension Finance Manager, Fund Actuary, Strategic Risk Adviser and Investment Advisor.
- Hedging - A strategy aiming to invest in low risk assets when asset yields are deemed attractive. Achieved by investing in government backed assets (or equivalent) with similar characteristics to the Fund future CPI linked benefit payments.
- Hedge ratio – The level of hedging in place in the range from 0% to 100%.
- Insight QIF (Insight Qualified Investor Fund) – An investment fund specifically designed for the Fund to allow Insight to manage the liability hedging and synthetic equity assets.
- London Interbank Offer Rate (LIBOR) - An interest rate at which banks can borrow funds from other banks in the London interbank market.
- Z-spread – The difference between the yield on gilts and swaps.

IMPORTANT NOTICES

References to Mercer shall be construed to include Mercer LLC and/or its associated companies.

The findings, ratings and/or opinions expressed herein are the intellectual property of Mercer and are subject to change without notice. They are not intended to convey any guarantees as to the future performance of the investment products, asset classes or capital markets discussed. Past performance does not guarantee future results. Mercer's ratings do not constitute individualized investment advice.

Information contained herein has been obtained from a range of third party sources. While the information is believed to be reliable, Mercer has not sought to verify it independently. As such, Mercer makes no representations or warranties as to the accuracy of the information presented and takes no responsibility or liability (including for indirect, consequential or incidental damages), for any error, omission or inaccuracy in the data supplied by any third party.

This does not constitute an offer or a solicitation of an offer to buy or sell securities, commodities and/or any other financial instruments or products or constitute a solicitation on behalf of any of the investment managers, their affiliates, products or strategies that Mercer may evaluate or recommend.

For the most recent approved ratings of an investment strategy, and a fuller explanation of their meanings, contact your Mercer representative.

For Mercer's conflict of interest disclosures, contact your Mercer representative or see www.mercer.com/conflictsofinterest.

This analysis is subject to and compliant with TAS 100 regulations.

MERCER