CLWYD PENSION FUND

RISK MANAGEMENT FRAMEWORK MONTHLY MONITORING REPORT

September 2017

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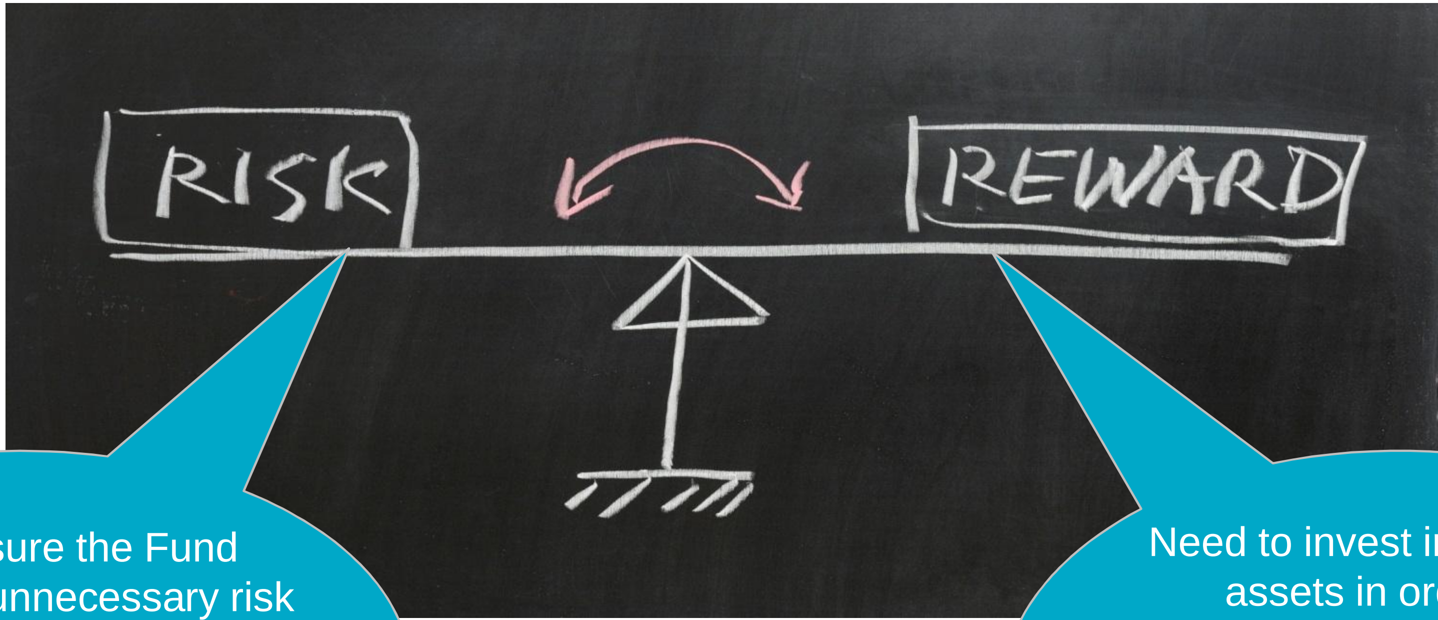
THE PERENNIAL BALANCING ACT



Need to ensure the Fund does not take unnecessary risk in order to **protect** the current funding position – implies investing in assets which give a more certain real return.

Need to invest in “growth” assets in order to (expect to) **improve funding level** without further employer contributions – Implies investing in growth assets (e.g. equities).

Maintaining required expected return + **Better Risk Management** = **Improved long-term affordability and sustainability in the cost of pension provision**

FRAMEWORK - 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) than when 110% funded?

RISK MANAGEMENT OPTIONS
IMPACT OF HEDGING AT ATTRACTIVE LEVELS

Increasing certainty

- Increasing the liability hedge ratio at an attractive rate of return will increase certainty of real return outcomes.
- What this means is that the Fund would have a better chance of meeting the required return target.

Maintaining/Improving affordability

- As we now are more certain about achieving the required level of return it is possible to increase the liability discount rate (all other things equal).
- The impact of this would be to reduce any deficit.

Reducing asset risk

- In insolation, increasing the hedge ratio does not change the volatility associated with growth assets.
- Instead of maintaining/improving affordability, the Fund could reduce the risk associated with growth assets without impacting the value placed on the liabilities.

In practice a balanced approach could be adopted

EXECUTIVE SUMMARY

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

Overall funding position

- Ahead of existing recovery plan
- Funding level just below the first trigger
- Possible action will be discussed at FRMG following trigger breach

In absolute terms the funding position is c.13% 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
- Performance marginally behind the benchmark since inception

No action required.

Synthetic equity mandate

- Insight in compliance with investment guidelines
- Performed in line with the benchmark over the quarter
- Maturity constraints as expected

No action required.
Insight implemented an equity option strategy to provide protection on the equity TRS exposure in April.

Collateral and counterparty position

- Collateral within agreed constraints
- The Insight QIF can sustain at least a 1.25% rise in interest rates and inflation in combination with a 35% fall in equity markets and a 0.5% increase in z-spreads before requiring further collateral

Collateral adequacy to be monitored quarterly. Potential to release further monies into the portfolio based on the agreed collateral guidelines at 30 June 2016.

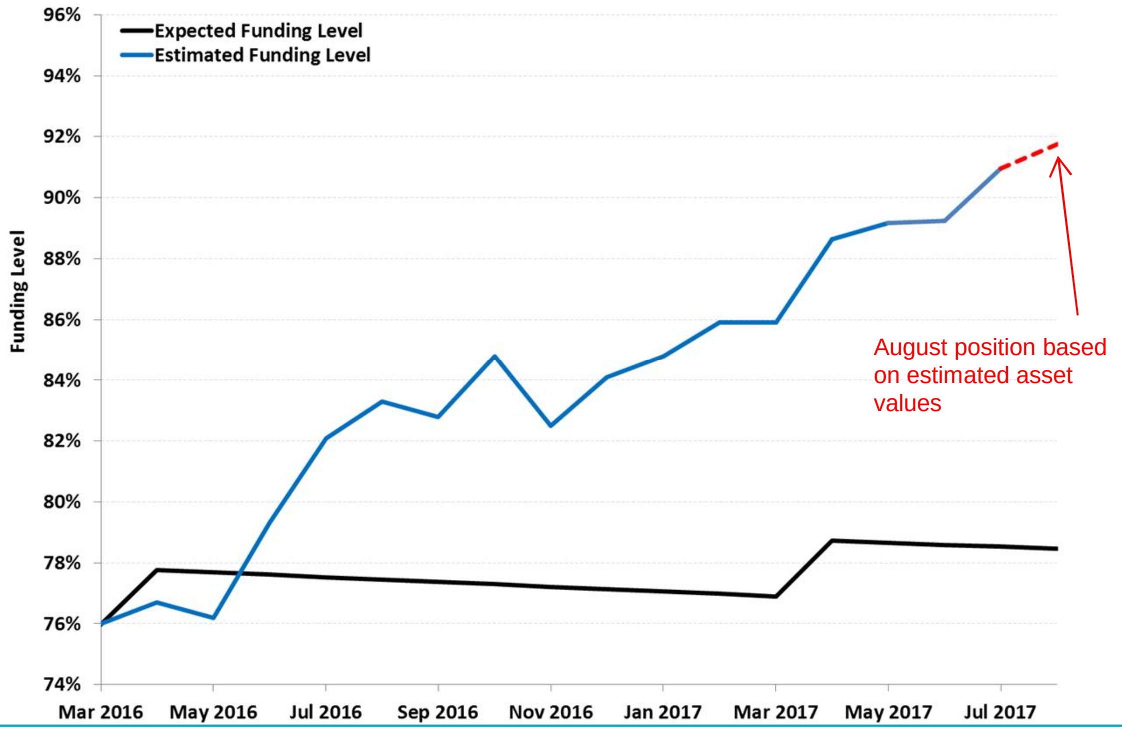
LIBOR Plus Fund

- LIBOR has outperformed its target since inception
- Management team stable and no change in manager rating
- Allocation of £50m remains appropriate

No action required.

FUNDING LEVEL MONITORING TO 31 AUGUST 2017

Estimated funding position since 31 March 2016



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 August 2017 was around 79%.

The **blue line** shows an estimate of the progression of the funding level from 31 March 2016 to 31 July 2017. The **red line** shows the progression of the estimated funding level over August 2017. At 31 August 2017, we estimate the funding level and deficit to be:

92% (£162m*)

This shows that the Fund’s position was ahead of the expected funding level at 31 August 2017 by around 13% on the current funding basis.

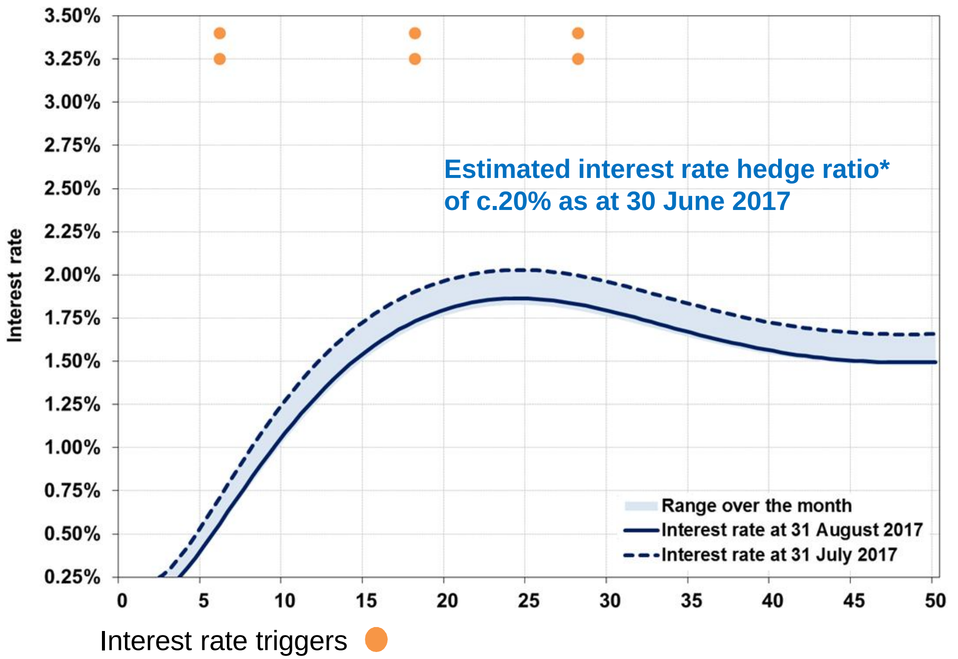
Uncertainty continues to be prevalent in the investment environment due to ongoing external political and fiscal factors. This could mean that the likelihood of achieving the assumed real returns going forward has fallen. To illustrate the impact, a reduction of 0.25% p.a. in the assumed future investment return/real discount rate would reduce the funding level by 5% to 87% with a corresponding increase in deficit of £90m to £252m.

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 31 July 2017 to 31 August 2017. 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.

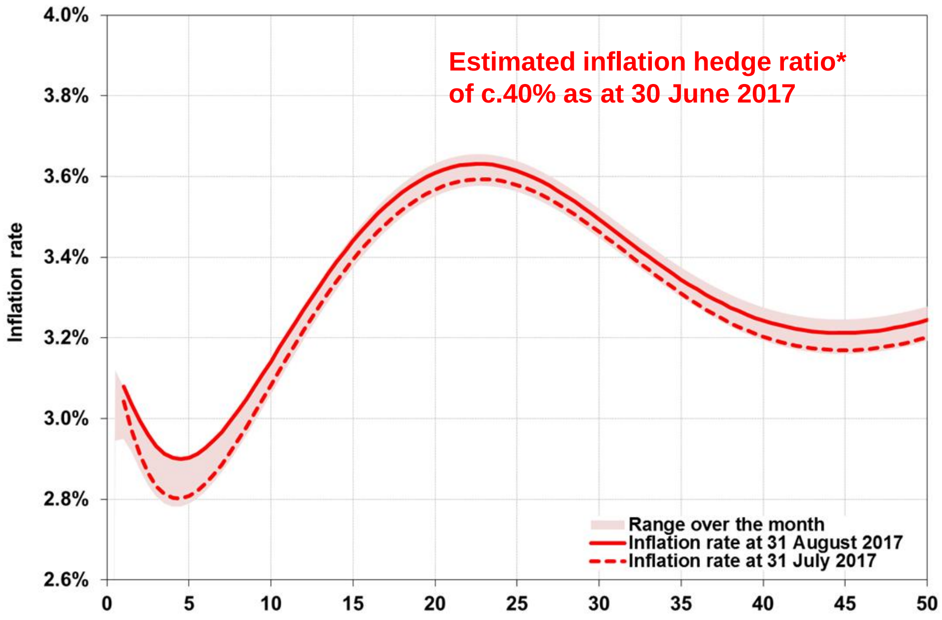
UPDATE ON MARKET CONDITIONS AND TRIGGERS

Change in interest rates



Date	Band 1	Band 2	Band 3	Band 4	Actual
30 June 2017	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
30 June 2017	40.0%	40.0%	40.0%	40.0%	40.0%

Comments

Interest rates fell across the curve during August, with falls of around 0.2% p.a. across most durations. No triggers were hit over the month.

Following the restructure of the Fund's LDI portfolio in March 2017, the Fund implemented a revised interest rate trigger framework during August. The triggers are shown in the chart above.

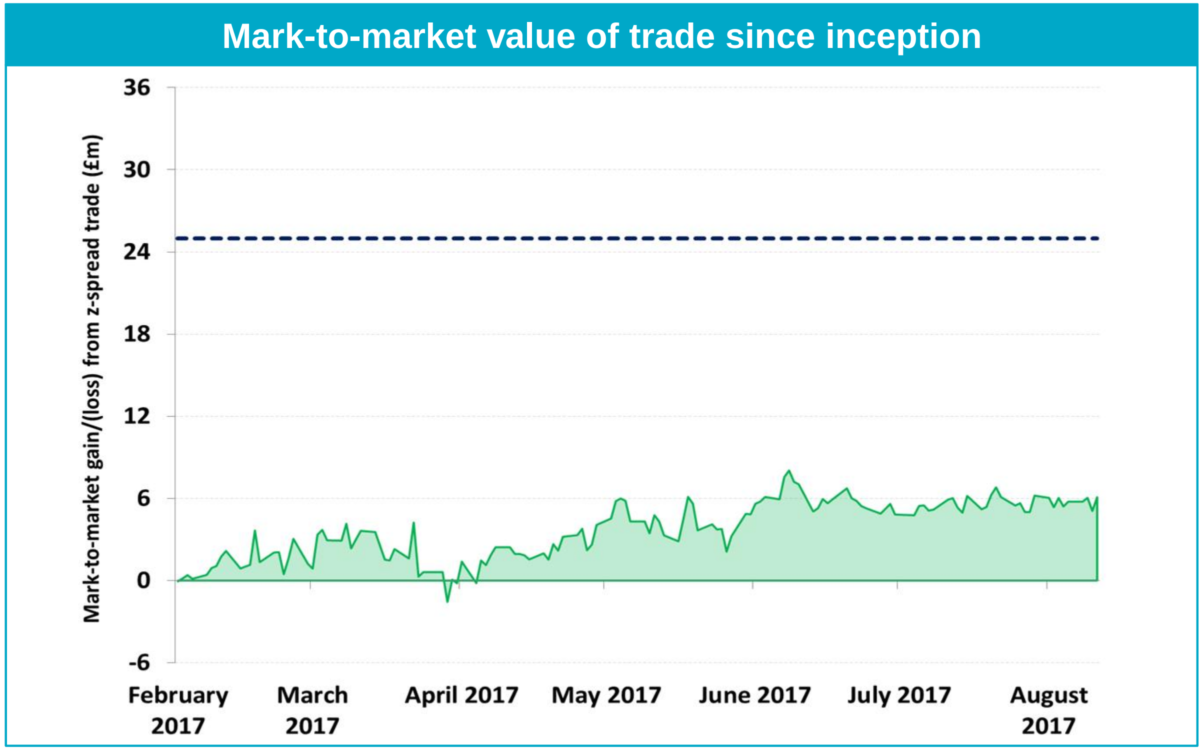
Comments

Inflation expectations have risen at all durations over August 2017, with average increases of 0.1% observed across the curve.

The inflation hedge is at the maximum level currently allowable. 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 VALUE OF THE MANDATE RESTRUCTURE



Note: no allowance made for yield improvement from the inflation trade

Comments

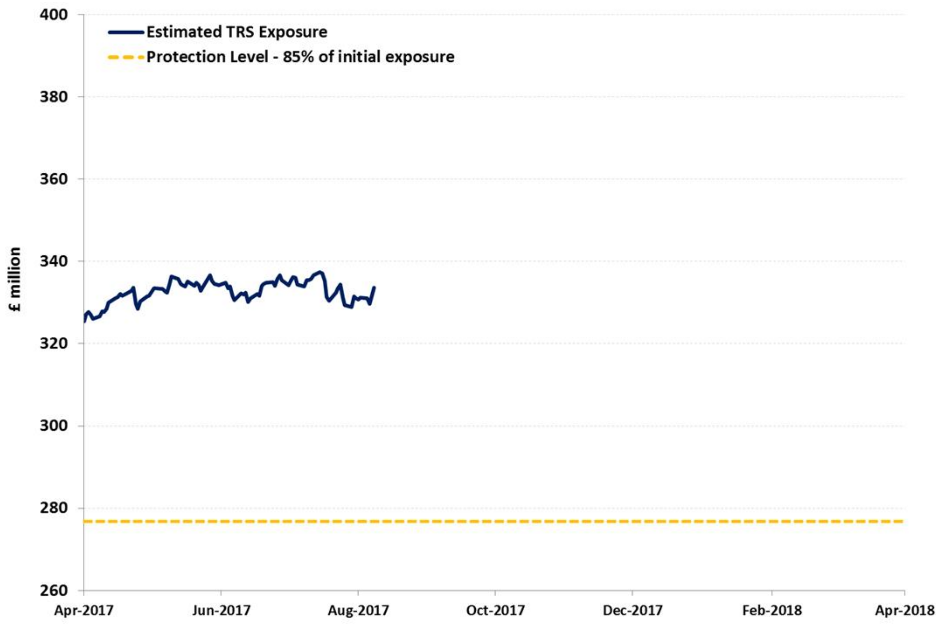
Insight estimated the potential net gain of the LDI restructure to be c.£36.5m. This gain will be accrued incrementally over the lifetime of the trade, assuming repo and swap funding costs offset one another.

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 fell slightly over the month given the marginal increase in z-spreads, providing an estimated gain of c. £6.1m as at 31 August 2017. This position will be monitored over time.

At the FRMG on 20 June 2017, it was agreed that Mercer would monitor a "soft" trigger to prompt discussions around closing out the trade to "bank" the gain if the mark-to-market gain exceeds £25m.

EQUITY TOTAL RETURN SWAP (TRS) PROTECTION

Equity protection



Comments

An equity option strategy has been implemented to protect the Fund against falls in equity market values over a one-year period to 24 April 2018.

In particular, put options were purchased to protect the value of the current equity TRS exposure beyond 15% market falls over the period to April 2018.

The chart illustrates the value of the equity TRS over the period from 24 April 2017 to 31 August 2017 (the **dark blue line**) and the **yellow dotted line** shows the level at which the protection will start to take effect.

Overall, the value of the Fund's TRS is broadly unchanged as at 31 August 2017 when compared with the 31 July 2017 position, although equity markets remained volatile over the month.

North American and UK equity markets saw gains over August 2017 whilst European and Japanese equity markets fell.

We will continue to monitor this position on a monthly basis.

GLOSSARY

- Actuarial Valuation - The formal valuation assessment of the Fund detailing the solvency position and determine 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 by 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.
- Equity option – A financial contract in which the Fund can define the return it receives for movements in equity values.
- Equity TRS (Equity Total Return Swap) – A financial contract in which the Fund receives the return on an equity index. In return the Fund must pay a regular financing fee to a counterparty bank.
- 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.

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