Leicestershire County Council Pension Fund

Protection portfolio review

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Philip Pearson, Partner
Michael Salem, Senior Investment Analyst

For and on behalf of Hymans Robertson LLP

Contents

1 Summary

Addressee and purpose

This paper is addressed to the Investment Sub-Committee ("ISC") of Leicestershire County Council Pension Fund ("the Fund"). The purpose of this paper is to present the findings of our review of the structure of the Fund's protection asset portfolio which includes index-linked bonds ("ILB"), investment grade corporate bonds ("IGC"), cash and a currency ("FX") hedging programme.

This paper should not be used for any other purpose. It should not be released or otherwise disclosed to any third party except as required by law or with our prior written consent, in which case it should be released in its entirety. We accept no liability to any other party unless we have accepted such liability in writing. We provide comment from an investment but not a legal or tax perspective. This report complies with Technical Actuarial Standard 100: Principles for Technical Actuarial Work.

Please note that Hymans Robertson LLP and our group companies have a wide range of clients some of which are fund managers who may be included in and/or recommended to you as part of this exercise. We have a research team that advises on shortlisting fund managers in manager selection exercises, which is separate from our client and other relationships with fund managers and therefore we do not believe there will be a conflict that would influence the advice given. We would be happy to discuss this and provide further information if required.

Background and scope

At its January 20th meeting, the Local Pension Committee agreed the recommendations of the 2023 review of investment strategy. There were no changes to the target allocation to protection assets, but it was recommended that a review of the structure of the portfolio be undertaken.

The scope of the review includes:

- Mix of protection assets employed
- Regional allocation of capital
- Balance between active and passive management
- Changes required to support climate strategy (high-level considerations only)
- Opportunities to further simplify the portfolio.

Consideration of changes to the target allocation to protection assets was out of scope at this stage. There have been further increases in interest rates and government bond yields since the beginning of the year which may change the attractiveness of protection assets relative to other asset classes, and therefore the optimal portfolio mix. In our experience, the case for material changes in allocation for typical LGPS funds is relatively weak even with protection assets trading at current market levels. But if there are further, sustained increases in interest rates and government bond yields the investment case, will become stronger. We recommend the position on this issue is monitored over the coming months and reviewed fully at the 2024 strategy review. Consideration of alternative protection assets such as asset-backed securities, private debt secured against real assets, gold etc was likewise deferred.

Key findings

The Fund invests in protection assets in order to protect its funding position by reducing investment risk and mitigating the impact of fluctuations in the value of the liabilities. Protection against a range of key risks is also provided by other asset classes in the Fund's diversified portfolio.

We have tested the level of protection provided and conclude that the Fund's overall asset portfolio affords a high-level of protection in most macroeconomic scenarios. A prolonged period of very low yields (real yield below -1.5%) or negative returns on risk assets such as equities would be of concern; we consider the former possible but the latter unlikely.

We believe the Fund's protection assets are generally appropriate, benefit from very competitive fee arrangements, and deliver performance (where the track records are sufficiently long to form definitive conclusions) largely in line with expectations. We see no pressing requirement to materially change the mandates or divest from them.

We found that funding outcomes are relatively insensitive to the specific mix of protection assets employed, but believe there is scope to improve outcomes by allocating equal amounts to ILB and IGC (currently 60% ILB: 40% IGC excluding cash).

The Fund's ILB portfolio consists almost entirely of index-linked gilts, although the mandate allows Aegon to allocate up to 20% in overseas government and corporate bonds. We remain comfortable with this approach, providing the manager uses this flexibility where appropriate to add value and/or provide downside protection, and to confirm that the limits in the mandate provides sufficient flexibility to do so effectively.

The Fund's managers can invest in IGC denominated in sterling and other currencies; the current mix is 44% sterling: 56% other currencies. We are comfortable with the Fund allocating a material proportion of its IGC exposure to overseas bonds.

All the Fund's protection assets are managed actively. We considered alternatives but remain comfortable with the current arrangements.

We remain comfortable with the policy and structure of the Fund's FX hedging arrangements, including both the Aegon FX hedging programme and the hedging performed by underlying managers. But we believe there is scope to apply the policy more consistently across the Fund's portfolio.

Recommendations

In relation to the existing protection assets, we recommend the Fund:

- Adopts a balanced exposure to ILB and IGC, with the former allocated 3.25% and of total Fund assets and the latter 3.75%;
- Defers the reallocation of capital between ILB and IGC until the short-term outlook for the latter improves[1];
- Engages with Aegon regarding its index-linked bond mandate to ensure that the flexibility to invest in overseas bonds is being used to enhance returns and/or improve downside protection at times of market stress;
- Gives further consideration to an appropriate level of FX hedging for the Fund's high yield debt investments, in conjunction with its currency manager and investment advisor, with the final decision on hedging ratio being delegated to Officers and reported back to the Committee at a future meeting.

Considers the proposed changes to FX hedging arrangements detailed in Section 3 which are designed to ensure a more consistent application of the Fund's FX hedging policy. In some cases, the proposed changes could be implemented in several different ways. We therefore recommend the Fund further investigates the available FX hedging options, in conjunction with its currency manager and investment advisor, with the final

[1] Our short-term outlook, as at the end of June 2023, is positive on ILB and neutral on IGC.

decision on which option to adopt being delegated to Officers and reported back to the Committee at a future meeting.

At the next strategy review, we recommend the Fund:

- Reviews the target allocation to protection assets in light of the path of interest rates and government bond yields over the remainder of 2023;
- Considers the case for introducing alternative protection assets to improve the efficiency of the protection portfolio and the level of downside protection it provides.

Decarbonisation of the Fund's protection portfolio may also require focus during 2024. We recommend the Fund considers taking the following actions, which are further explained in Section 4:

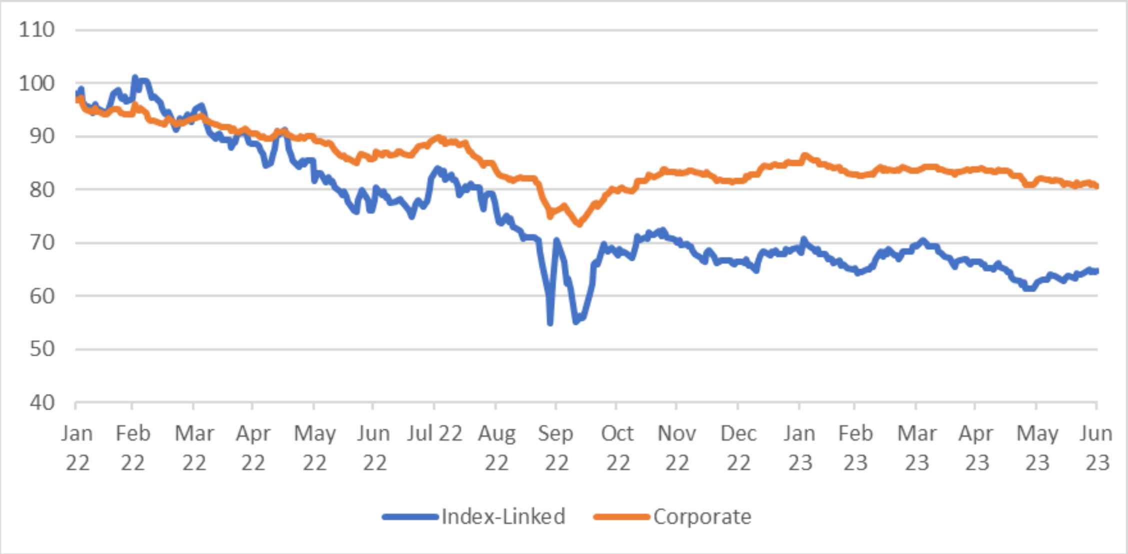
- Work with LGPSC to include corporate bonds in its 2023 climate risk report and index-linked sovereign bonds in the 2024 report;
- Determine an appropriate approach for carbon accounting for the Fund's cash investments and FX hedging programme;
- Further engage with investment managers to ensure they are taking appropriate action on capital reallocation and stewardship to reduce emissions;
- Model the prospective emissions and exposure to climate opportunities of the Fund's protection assets;
- Develop short-/medium-term decarbonisation targets which are consistent with the Fund's long-term Net Zero goal but also realistic given the Fund's baseline position and available investment solutions;
- Consider what further changes (if any) should be made to the protection portfolio in order to deliver the agreed targets.

2 Investment objective

The Fund invests in protection assets in order to protect its funding position by reducing investment risk and mitigating the impact of fluctuations in the value of the liabilities. Current investments include investment grade ("IG") government bonds, corporate bonds, cash and currency derivatives.

Index-linked bonds ("ILB") and investment grade corporate bonds ("IGC") were amongst the worst performing assets during 2022, as Figure 1 below demonstrates. The value of these assets has fallen dramatically as interest rates, inflation and credit spreads have increased.

Figure 1: ILB/IGC returns, Jan-22 to Jun-23[2]



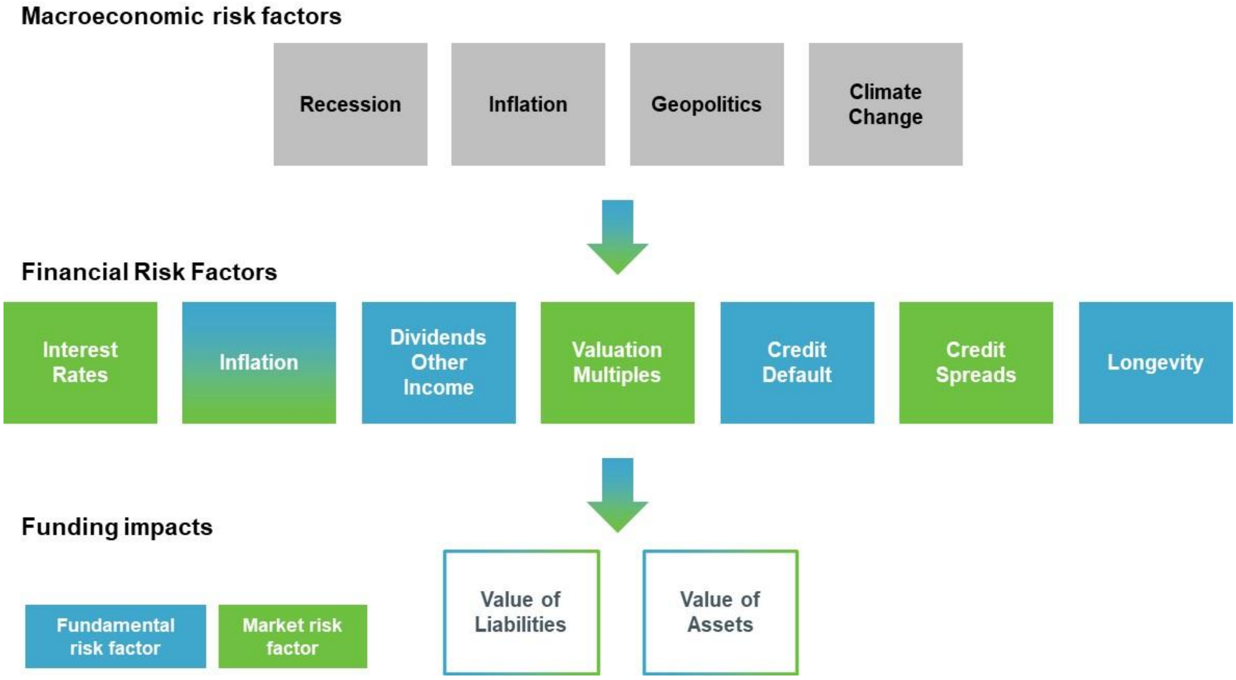
Why are they considered to provide protection? They do so by matching the fluctuations in the value of the Fund's liabilities as inflation expectations and interest rates change. In 2022, higher long-term inflation increased the future cost of benefits but the effect was more than offset by the increase in interest rates and government bond yields. Increases in government bond yields, and the expected return of many asset classes, increases the discount rate applied to the Fund's liabilities, driving down their present value. As a result, it is likely that the Fund's funding position actually improved.

For most of the time since the global financial crisis, however, interest rates fell and remained low, driving up the value of the Fund's liabilities, but also the value of the protection portfolio, thus protecting the funding position.

Protection assets also reduce the overall level of investment risk. They are affected by market volatility in the short-term, but over the long-term they are lower risk because there is a very high likelihood that investors will receive all the interest and principal repayments due.

It should be remembered that it is not only the protection assets which protect the funding position. All the asset classes in the portfolio play a part in mitigating macroeconomic and financial risks to the Fund, such as those illustrated in the diagram below.

[2] Source: DataStream



Financial risk factors are grouped into two categories: (1) market risk factors (highlighted in green above) which primarily influence the market value of the Fund's assets and (2) fundamental risk factors (highlighted in blue above) which cause actual economic loss such as credit default. As a long-term investor, the Fund is well placed to "look through" market risk factors though they do influence the price at which assets are bought and sold and can cause actual economic loss if the Fund's investment managers are forced to sell the assets during a market down-turn. Fundamental risk factors are of more concern.

The table overleaf summarises the protection provided **to the funding position** over the long-term by each asset class the Fund invests in (green=strong protection, yellow=moderate protection, blue=some protection, but limited). Points to note:

- All the asset classes in the portfolio play a part in mitigating macroeconomic and financial risks to the Fund.
- Assets with index-linked cashflows, such as certain property and infrastructure assets, provide protection against inflation.
- The equity of companies with market pricing power also benefits from moderate levels of inflation over the long-term.
- Assets paying floating rates of interest, such as private debt and some multi-asset credit strategies, benefit from the higher rates that typically accompany higher inflation.
- Assets denominated in foreign currencies (unhedged) offer further protection because sterling typically devalues during periods of high domestic inflation, thus increasing the local value of overseas assets.
- Equity and real assets benefit from larger populations, producing "excess" returns which may offset the impact of increased longevity.

	Cash[3]	Index-linked Gilts	£ Corporate Bonds	Multi-Asset Credit	Private Debt	Infrastructure	Property	Fundamental risk factors	Listed Equity	Targeted return
Higher Inflation										
Lower asset income										
Credit default										
Increased longevity										
Market risk factors										
Lower interest rates										
Lower valuation multiples										
Wider credit spreads										
Target Allocation (%)	0.75%	4.5%	2.75%	9%	10.5%	12.5%	10%	7.5%	37.5%	5%

Below we use the results of the asset-liability modelling work undertaken to support the 2022 valuation to assess how well protected the Fund is against three key risks: inflation, interest rates and equity returns (which reflect fluctuations in dividend income and valuation multiples). We do so by projecting long-term funding outcomes and the associated metrics for the current strategy: likelihood of success and downside funding level. The likelihood of success is defined as the probability of being fully funded (100% funding position) in 20 years. The downside funding level is defined as the average funding position in 3 years time in 5% of the 5,000 different macroeconomic scenarios considered in our asset-liability modelling, which is a measure of downside risk. Macroeconomic conditions have changed dramatically since the original analysis was undertaken, but we believe the results remain valid. The results are shown in Table 1, 2 and 3[4].

[3] Includes cash held as collateral in the FX hedging programme

[4] Source: Hymans Robertson. The results above are estimated likelihoods of success in 20 years and downside funding levels in 3 years. The modelling above is based on the ALM results that were considered as part of the 2022 strategy work,

Table 1: Sensitivity of funding outcomes to long-term inflation (Headline RPI) rate

Inflation band RPI (%)	All	1	2	3	4	5	6
Greater than	n/a	7.5	4.0	3.0	2.25	1.5	n/a
But less than	n/a	n/a	7.5	4.0	3.0	2.25	1.5
Likelihood of success, 20y[5]	86.5	91.4	86.5	85.1	87.8	87.9	85.4
Downside funding level, 3y[6]	48.8	44.6	47.8	48.5	49.8	49.7	49.0

Table 2: Sensitivity of funding outcomes to long-term real yield

Real yield band (%)	All	1	2	3	4	5	6
Greater than	n/a	2.5	1.5	0.5	-0.5	-2.0	n/a
But less than	n/a	n/a	2.5	1.5	0.5	-0.5	-2.0
Likelihood of success, 20y	86.5	97.7	94.6	89.0	79.6	72.9	44.3

Table 3: Sensitivity of funding outcomes to long-term equity returns

Overseas equity return band (%)	All	1	2	3	4	5	6
Greater than	n/a	9.5	7.0	5.0	2.5	0.0	n/a
But less than	n/a	n/a	9.5	7.0	5.0	2.5	0.0
Likelihood of success, 20y	86.5	99.9	98.5	94.3	85.8	68.1	37.4
Downside funding level, 3y	48.8	58.4	54.1	50.8	48.5	44.9	42.6

The above results demonstrate that the Fund is well protected against long-term inflation rates, although inflation spikes such as the one we are currently experienced, may have a material short-term impact on the funding and cashflow position.

Funding outcomes are more sensitive to long-term real yields, which reflect the market's expectations of interest rates minus inflation over the long-term. This is largely because they directly affect the value of the liabilities (via the discount rate) and are less well hedged by Fund's asset portfolio. However, real yields would only become a material concern if they fell back below -c0.5%. Our latest estimate (March 2023) of neutral, sterling real yields is +c0.5%, but yields could fall well below this if the UK economy reverts to the low growth, moderate inflation and ultra-loose monetary policy state experienced after the Global Financial Crisis.

Funding outcomes are also more sensitive to long-term returns on risk assets such as equities. This is because the Fund relies on them to generate the positive real returns needed to fund its liabilities whilst maintaining an affordable level of contributions. But the results above demonstrate that the Fund is well protected, partly by diversification, unless realised returns are below 2% for an extended period. We consider this possible, given the Japanese experience over the last 30 years, but unlikely.

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combining the "current strategy" and "10% de-risk (growth to income)" 50/50 in order to align the modelling closer to the actual current strategy.

[5] The probability of being fully funded in year 2043
[6] The funding level risk in year 2026 (the average of the worst 5% of outcomes)

In summary, we conclude that the Fund's overall asset portfolio affords a high-level of protection in most macroeconomic scenarios. A prolonged period of very low yields (real yield below -0.5%) or very low returns on risk assets such as equities would be of concern; both are possible but we consider the former more likely than the latter.

3 Current portfolio

Current investments

The protection portfolio comprises index-linked bonds ("ILB"), investment grade corporate bonds ("IGC"), cash and currency ("FX") derivatives used to hedge currency exposure, as shown in Table 4 below:

Table 4: Current investments[7]

Manager	LGPSC	Aegon	Aegon	Cash Funds
Fund	Investment Grade Credit	Index-linked Fund	Short Dated Climate Transition Fund	Pooled cash funds Aegon collateral account
Active/Passive	Active	Active	Active	Active
Benchmark	LGPSC Corp Index + 0.8%	FTSE All Stocks Index Linked Index	SONIA 3 Month +1.25% (GBP)	SONIA 3 Month
Target outperformance	0.80% (rolling 3 year period, net of fees)	0.30% (rolling 3 year period, gross of fees)	1.25% (rolling 3 year period, gross of fees)	0.00%
Target allocation	2.25%	4.5%	0.5%	0.75%
Inception date	Apr 20	Dec 13	Mar 21	Mar 16

Fund currency hedging programme is run by Aegon and is described in more detail below.

The Aegon ILB programme invests in index-linked bonds and aims to out-perform its benchmark by 0.30% p.a. (gross of fees). The manager has the ability to invest in sovereign and corporate issuance globally but the programme is benchmarked against UK index-linked gilts and that is the primary focus. Value is added through duration management, yield curve positioning and issue selection based on relative value, subject to a range of portfolio constraints.

The Aegon Global Short-Dated Climate Transition fund invests in short-dated corporate bonds and commercial paper and aims to out-perform its benchmark (SONIA) by 1.25% p.a. (gross of fees). This benchmark reflects the primary purpose of the fund which is to generate cash plus returns. The manager also aims to achieve a portfolio carbon intensity 30% lower than a specified market index (BoAML Global Large Cap Corporate 1-5y). The investment is held to enhance the returns on capital that would otherwise be held in cash to collateralise the currency hedging programme. Value is added through duration management, currency and issue selection.

Most of the fund's investments are fixed income assets which means it is likely to suffer structural under-performance relative to its floating rate benchmark during a period of rising interest rates (albeit less so than longer duration strategies would). Some asset owners address this issue by introducing a secondary benchmark, often a market index, but this can reduce the clarity of the investment objective and introduce additional complexity in performance reporting. We prefer the simpler approach of a single floating rate benchmark which reflects the primary purpose of the fund and focusing on relative performance over the longer-term.

The LGPSC Investment Grade Credit fund invests in global, investment-grade corporate bonds (Developed Markets only), split approximately 50% Sterling:50% non-Sterling issuance. The aim is to out-perform its benchmark by 0.80% p.a. (net of fees) on a rolling 3 year basis. Capital is split equally between Fidelity and Neuberger Berman, both of which are large, well-resourced and well-regarded fixed income managers. We remain comfortable with the process LGPSC employed to select these managers.

[7] Source: Q1 2023 manager reports; investment managers

A multi-manager approach can improve the resilience of returns, across different market environments, providing the underlying managers pursue differentiated and complementary investment strategies. That appears to be the case here:

- Fidelity's approach combines top-down (macro economic) and bottom-up (fundamental credit and relative value analysis) inputs and seeks to add value through country/currency, sector, issuer/capital structure selection as well as duration management and yield curve positioning;
- Neuberger Berman is a value manager. It avoids introducing macro-economic tilts into the portfolio and focuses instead on stock selection based on value, absolute and relative, and fundamental credit analysis.

Both managers run well diversified portfolios: Fidelity held 388 securities as at 31 March 2023, Neuberger Berman 462. Both managers integrate ESG factors into their investment processes. The differences in approach are reflected in the different composition of each sub-portfolio as shown in Table 5 below:

Table 5 Portfolio composition by manager, as at 31 March 2023[8]

		Fidelity	Neuberger Berman
Asset type	ABS	0.00	0.00
	Sovereign	10.00	0.00
	Supra-national	0.00	0.00
	Corporate	86.30	95.50
	Other/cash	3.70	4.50
Issuer location	North America	27.20	42.50
	Europe (ex UK)	37.40	22.90
	UK	31.60	28.00
	Japan	0.70	1.10
	Asia Pacific (ex Japan)	3.40	0.90
	EM	0.00	0.00
	Other/cash	-0.30	4.60
Credit rating	AAA	4.20	1.30
	AA	6.20	7.00
	A	23.10	43.40
	BBB	62.10	45.70
	BB<	0.20	0.00
	Unrated	0.50	0.00
	Other/Cash	3.70	2.60
Sector split	Basic Materials	0.70	2.70
	Communications	3.50	10.30
	Consumer Cyclical	7.50	5.40
	Consumer Non-cyclical	7.60	8.70
	Diversified	0.00	0.00
	Energy	0.50	4.10
	Financial	54.30	46.10
	Funds	0.00	0.00
	Governments	8.60	0.00
	Industrial	1.70	1.00
	MBS	0.00	0.00

[8] Source: LGPS Central

	Technology	0.90	5.20
	Utilities	10.90	12.00
	Cash	3.70	4.50[9]

We considered the case for adding a third manager to further diversify strategy risk. We do not believe this is necessary for a fund which focuses on corporate bonds. There is potentially a case for adding a specialist manager or lower risk multi-asset credit manager to provide exposure to alternative protection assets such as ABS or investment grade loans, but we recommend the Fund reviews its appetite for such assets before asking LGPSC to extend its mandate and/or considering third party solutions.

In summary, we believe the Fund's ILB and IGC investments are generally appropriate and benefit from very competitive fee arrangements, although it should be noted that these mandates are customised to the Fund's requirements which makes cost benchmarking inherently challenging.

FX hedging programme

The Fund invests globally and therefore has FX exposure in many of its investments. We understand current policy is to:

- Fully hedge FX exposure on debt investments, in both public and private markets;
- Hedge a proportion of FX exposure on equity and real asset investments;
- Currency exposure is not hedged if it is being actively managed as a source of added value (as is the case in some targeted return strategies for example);
- Rely on underlying managers to hedge FX exposure where possible, in order to reduce hedging costs and operational risks to the Fund
- Employ a specialist currency manager (Aegon) to run a standalone programme to hedge the remaining FX exposures where it is practical and cost effective to do so.

We are supportive of the above policy. We generally recommend fully hedging debt investments so as to avoid currency volatility swamping their returns and, in particular, the stable income streams they generate. Debt investments with contractual cashflows are also easier to hedge than equities. FX exposure can under certain circumstances diversify other risks, so some exposure via the Fund's equity and real asset investments can add value at a portfolio level. We recommend setting the target hedge ratio at 30% so as to minimise overall risk.

High yield debt investments such as multi-asset credit and private debt do not fit neatly into the above framework. They are debt investments and the Fund invests in them for the stable income streams they generate. But their returns are closer to those of equities, so can "tolerate" a degree of currency volatility. Deciding on an appropriate level of FX hedging is therefore more challenging and should take into account the Fund's beliefs and appetite for currency risk and existing hedging arrangements at underlying manager level. We recommend the Fund gives this further consideration, in conjunction with its currency manager and investment advisor, with the final decision on hedging ratio being delegated to Officers and reported back to the Committee at a future meeting.

[9] Source: Email from LGPSC 9 June 2023 and email from Aegon on 8 June 2023

FX hedging can be operationally complex and expensive so a pragmatic approach is essential. As a result, the Fund employs different arrangements across the portfolio, as shown in Table 6 below.

Table 6: FX hedging arrangements[10]

Mandate	FX exposure (Y/N)?	FX hedged (Y/N)?	Target hedge ratio	Hedging provider
L&G Passive Equity	✓	✓	30%	Aegon
LGPSC Global Eq Active Multi manager Fund	✓	✓	30%	Aegon
LGPSC EMM Eq Active Multi manager Fund	✓	✓	30%	Aegon
LGPSC AW Eq Climate Multi Factor Fund	✓	×	-	-
Aspect Capital Partners	✓	✓	c100%	BNY
Pictet	✓	✓	Set to deliver 80% £ exposure	Pictet
Ruffer	✓	FX actively managed	n/a	Ruffer
Adams Street	✓	USD only 72% AUM	30%	Aegon
LGPSC PE Fund 2018 & 2021	✓	×	-	-
Aberdeen Standard PE Fund	✓	USD only 41% AUM	30%	Aegon
JPM Infra Fund	✓	USD only 42% AUM	30%	Aegon
IFM Global Infra Fund	✓	USD only 47% AUM	30%	Aegon
KKR Global Infra Fund	✓	✓	30%	Aegon
Stafford Timberland Fund	✓	USD only 41% AUM	30%	Aegon
LGPSC Infra Core/Core +	✓	×	-	-
Quinbrook Net Zero Power Fund and Co-Investment Fund	✓	×	-	-
Colliers Pooled Fund	×	×	-	-
Colliers Direct property	×	×	-	-
La Salle Fund	✓	✓	100%	La Salle
Kames Capital II Fund	×	×	-	-
LGPSC Multi-Asset Credit Fund	✓	✓	90%-100%	LGPSC
LGPSC Global Active EMM Bond Multi manager Fund	✓	✓	90%-100%	LGPSC
CRC - CRF 3 and CRF 5	✓	✓	30%	Aegon
M&G DOF	✓	✓	100%	M&G
Partners Group Fund	✓	✓[11]	95% - 110%	Partners Group
LGPSC PD Low Return I	✓	×[12]	-	-
LGPSC PD High Return I	✓	×[12]	-	-
LGPSC PD Real Assets I	✓	×[12]	-	-
Aegon Index-linked	×	×	-	-
Aegon Global Short Dated Climate Transition Fund	✓	✓	100%	Aegon
LGPSC Inv Grade Credit Fund	✓	50% AUM non-sterling exposure	90%	LGPSC

[10] Source: LCCPF, Aegon, LGPS Central, other investment managers
[11] At managers discretion
[12] Some currency exposure is already hedged by the underlying managers appointed by LGPSC

The Aegon FX programme aims to hedge a proportion of FX exposure (the "hedge ratio") on a subset of the Fund's equity and real asset investments as shown in the table above. The programme currently covers £1.9bn of FX exposure, with 18 foreign currencies hedged, and the remainder to which the Fund has minimal exposure left unhedged.

The target hedge ratio was reduced from 50% to 30% in April 2021. The aim of the change was to improve investment outcomes, given that a degree of currency exposure can improve portfolio diversification, but too much can swamp the returns generated by the underlying investments.

The primary aim of the programme is downside protection, but the manager is mandated to vary the hedge ratio actively for each currency with the aim of adding value. The ratio can be varied between 0 and 100%. The manager employs a process which combines quantitative analysis and qualitative assessment of factors such as macroeconomic developments, currency risks and correlations with other asset classes, valuations, and technical factors to determine appropriate hedge ratios. The hedge ratio is likely to be reduced below 30% where the currency is cheap (relative to sterling), local monetary policy is easing, currency returns are negatively correlated with equities and/or hedging costs are excessive.

Although the manager has the flexibility to vary the hedge ratio, this remains a strategic hedging programme not a currency trading strategy, with positions typically being held for some time.

We remain comfortable with the policy and structure of the Fund's FX hedging arrangements, including both the Aegon FX hedging programme and the hedging performed by underlying managers. But we recommend the Fund considers the following changes which are designed to ensure a more consistent application of the Fund's hedging policy:

Mandate	Action	Possible hedging providers
LGPSC AW Eq Climate Multi Factor Fund	Request sterling hedged ("GBPh") share class from manager Otherwise extend Aegon FX programme to cover this investment (target hedge ratio 30%)	Aegon or LGPSC*
Adams Street	Confirm no GBPh share class to be offered by the manager Extend Aegon FX programme to cover all main currencies	Aegon
LGPSC PE Fund 2018 & 2021	Request GBPh share class from manager Otherwise extend Aegon FX programme to cover this investment (target hedge ratio 30%)	Aegon or LGPSC*
Aberdeen Standard PE Fund	Confirm no GBPh share class to be offered by the manager Extend Aegon FX programme to cover all main currencies	Aegon
JPM Infra Fund	Confirm no GBPh share class to be offered by the manager Extend Aegon FX programme to cover all main currencies	Aegon
IFM Global Infra Fund	Confirm no GBPh share class to be offered by the manager Extend Aegon FX programme to cover all main currencies	Aegon
Stafford Timberland Fund	Confirm no GBPh share class to be offered by the manager Extend Aegon FX programme to cover all main currencies	Aegon
LGPSC Infra Core/Core +	Request GBPh share class from manager Otherwise extend Aegon FX programme to cover this investment (target hedge ratio 30%)	Aegon or LGPSC*
Quinbrook Net Zero Power Fund and Co-Investment Fund	Request GBPh share class from manager Otherwise extend Aegon FX programme to cover this investment (target hedge ratio 30%)	Quinbrook or Aegon*
LGPSC PD Low Return	Request GBPh share class from manager Otherwise extend Aegon FX programme to cover this investment (target hedge ratio TBD)	Aegon or LGPSC*
LGPSC PD High Return	Request GBPh share class from manager Otherwise extend Aegon FX programme to cover this investment (target hedge ratio TBD)	Aegon or LGPSC*
LGPSC PD Real Assets	Request GBPh share class from manager Otherwise extend Aegon FX programme to cover this investment (target hedge ratio TBD)	Aegon or LGPSC*

Aegon Index-linked	Extend Aegon FX programme to cover this investment if exposure to non-£ bonds increases	Aegon*

*Note: In the cases asterisked above, the Fund may have the option to implement FX hedging in several different ways. Our preference would be to use currency hedged share classes in the underlying funds, if the managers (LGPSC and Quinbrook) were willing to make these available, as this reduces costs and operational risks to the Fund If not, Aegon has indicated that they would in principle be able to extend their hedging programme to cover these exposures. The choice will depend on the availability of hedged share classes in the underlying funds, switching costs, ongoing fees legal and other considerations. We therefore recommend the Fund further investigates the available FX hedging options, in conjunction with its currency manager and investment advisor, with the final decision on which option to adopt being delegated to Officers and reported back to the Committee at a future meeting.

As manager of the FX hedging programme, Aegon will be required to post collateral from time to time. Aegon recommend holding collateral equal to 5% of gross exposure (for listed assets, potentially more for private markets assets) in the form of cash, cash equivalents or gilts. The Fund currently holds sufficient capital in the collateral account, Global Short-Dated Credit and Index-linked Bond funds managed by Aegon and its pooled cash funds to meet collateral requirements for the programme, both as it is currently scoped and even if all the changes suggested above were implemented.

The fees the Fund has negotiated in respect of the FX programme are competitive, although it should be noted that this programme is customised to the Fund's requirements which makes cost benchmarking inherently challenging.

Performance

Table 7: Performance, last 12m and since inception, as at 31 March 2023[13]

Manager		LGPSC	Aegon	Aegon
Fund details	Fund	Investment Grade Credit	Index-linked Fund	Short Dated Climate Transition Fund
	Benchmark	LGPSC Corp Index + 0.8%	FTSE All Stocks Index Linked Index	SONIA 3 Month +1.25% (GBP)
	Target outperformance	0.80%	0.30%	1.25%
	Inception date	Apr 20	Dec 13	Mar 21
Performance (% p.a.)	Absolute performance 12m	-10.8	-26.1	-1.1
	Absolute performance SI	-3.5	4.6	-1.1
	Relative performance 12m	-1.8	0.6	-5.1
	Relative performance SI	-1.6[14]	0.4[15]	-3.9[16]
	Performance vs peer group 12m	n/a[17]	3.5 (4th quartile)	-0.1 (2nd quartile)
	Performance vs peer group SI	n/a	1.8 (outperformed peer group)	0.1 (3rd quartile)
Risk(%p.a.)	Tracking error SI	n/a[18]	2.3	2.7

Note: as previously, we have identified discrepancies between manager and Portfolio Evaluation performance reporting. We have used the PEL report for all the managers and added the discrepancies in a footnote.

The performance of the LGPSC Investment Grade Credit fund since inception, relative to benchmark, has been somewhat disappointing but the fund is relatively young and the last 18 months have been a period of extraordinary volatility in bond markets. We believe it is still too early to take action on the basis of performance to date. The Aegon Index-linked Fund has performed in line with expectations. The Aegon Global Short-Dated Climate Transition fund has performed poorly relative to its benchmark, for the reasons outlined above, but in line with its peer group.

Looking at the returns generated by the FX hedging programme on a standalone basis provides a rather misleading view on performance. For example, when sterling weakens significantly, as it has in recent years, material losses will be reported for the programme. However, these will be offset by material gains in the sterling value of assets denominated in foreign currencies. A better measure of performance is the profit (or loss) generated by the manager as a result of varying the hedge ratios for each currency away from the target 30%. A profit shows that the manager has correctly decided to over (under) hedge a currency which subsequently fell

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[13] Source: Absolute and relative performance, Portfolio Evaluation report. Performance vs peer group: eVestment. Both as at 31 March 2023.

[14] LGPSC report relative performance of -0.3% p.a. since inception

[15] Aegon report relative performance of +0.8% in the last 12m and -0.1% p.a. since inception

[16] Aegon report relative performance of -3.3% in the last 12m and -2.2% p.a. since inception

[17] Custom benchmark, so no comparable peer group exists

[18] Source: Aegon. LGPS Central do not publish tracking error for the overall fund

(increased) in value and that overall currency risk has been managed appropriately. Performance on this basis is shown in Table 7 below.

Table 8: Profit and loss relative to neutral hedging position, as at 31 March 2023[19]

Return, %p.a. as at 31 March 2023	Last 12m	Since Inception
FX hedging programme	+0.02	+0.91

The table shows that the manager has added value of 0.91% p.a. since inception (January 2014). This is a good result for an active FX programme with fairly tight exposure limits and low turnover.

Conclusions

In summary, we believe the Fund's protection assets are generally appropriate, benefit from very competitive fee arrangements, and deliver performance (where the track records are sufficiently long to form definitive conclusions) largely in line with expectations. We see no pressing requirement to materially change the mandates or divest from them.

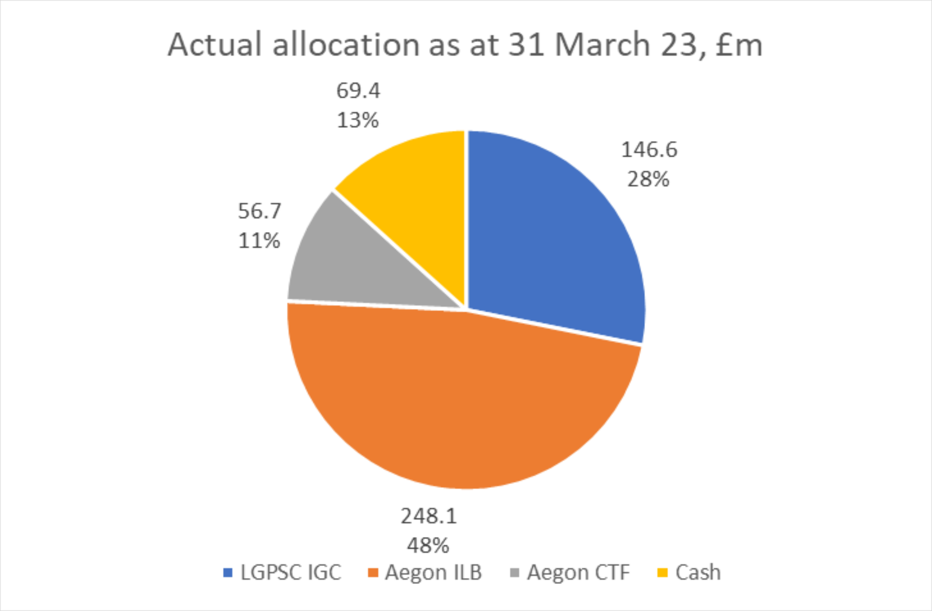
[19] Source: Aegon Q1 2023 investment report

4 Review of structure

Asset mix

The protection assets portfolio currently comprises index-linked bonds (predominantly UK sovereign issuance), investment grade corporate bonds and cash, split as shown in Figure 2. Derivatives are also held for FX hedging.

Figure 2: Actual allocation of protection assets, 31 March 2023[20]



The optimal mix of ILB (and nominal government bonds), IGC and cash is sensitive to the interaction between the Fund's asset portfolio and liabilities and can best be determined by asset-liability modelling. In Q4 2022, we conducted such modelling to determine the optimal mix for an LGPS fund with an asset allocation similar to the Fund. The modelling projects long-term funding outcomes over 5,000 different macroeconomic scenarios. We found that funding outcomes are relatively insensitive to the specific mix of typical protection assets but a portfolio of two-thirds IGC, one-third ILB (sovereign issuance) offers the best prospective outcomes.

The target allocation of the Fund's protection assets (excluding cash) is currently 62% ILB: 38% IGC. We therefore believe the proportion allocated to IGC should be increased. We note that Aegon has the ability to invest in index-linked corporate bonds, although Aegon confirms that exposure to date has been limited. Furthermore, our current tactical view (see Appendix 2) is more positive on ILB than IGC, largely due to the inflation protection the former offers especially at a time of elevated inflation risk. We therefore recommend increasing the IGC exposure to only 50%, with the remainder allocated to ILB. We consider the timing of the reallocation in Section 5.

Alternative protection assets

The Fund could also consider alternative protection assets that would provide further diversification, such as:

- Green bonds issued by large corporates, governments and supranational bodies to finance specific sustainability projects. The credit risk is typically the same because interest and principal repayments are funded from the issuers' general operating cashflow, and the yield is often but not always marginally lower than for conventional bonds;

[20] Source; Portfolio Evaluation report, Q1 23

- Real Asset-backed IG Senior Debt comprises loans which finance major capital assets such as commercial property and infrastructure and are structured to achieve a risk profile equivalent to investment grade. The Fund has existing exposure to such debt via the LGPS Central Credit Partnership programme but the assets in the programme will typically be sub-investment grade and therefore riskier;
- Asset-backed securities are issued by financial institutions to finance a pool of underlying assets, e.g. residential mortgages or consumer loans. The securities pay a coupon (fixed or floating rate) funded from the income generated by the asset pool and are secured against it. The securities are typically tranched and the senior tranches will usually be rated investment grade.
- Gold has traditionally been seen as the ultimate protection asset and can now be readily accessed by institutional investors;
- Absolute return bond strategies are active investment strategies which seek to generate cash + 2-3% returns by taking long and short positions in global fixed income markets. The Fund may at times already have exposure via its Targeted Return mandates;
- Equity protection strategies use derivatives to protect against a significant fall in equity markets over a specific period. Typically structured to protect against falls in the range 10-30% and are funded by foregoing a proportion of any rise in equity markets (e.g. above 7%). Ongoing protection can be provided by “rolling” the underlying derivatives but the costs and complexity of maintaining such programmes can be significant.

The rationale for investing in such assets, and the potential applicability to the Fund are summarised in the table below:

Alternative Protection Assets	Investment Rationale	Potential Applicability to LCCPF
Green Bonds	Increased exposure to projects which improve the sustainability of the global economy. Comparable risk to conventional bonds, but small yield discount. The case for investing in such assets therefore depends on short-term relative value opportunities and/or greater environmental/social impact	Low/moderate – would support the Net Zero goal; adds portfolio complexity.
Real Asset-Backed IG Senior Debt	Exposed to somewhat different income streams than corporate bonds, so may diversify credit risk. Typically provide a yield pickup. Security over tangible assets typically improves recovery rates in the event of default. Inflation-linked in some cases.	High – existing exposure to higher risk loans but a separate allocation to investment grade debt (both via the LGPS Central Credit Partnership) is potentially worth considering in the future.

Asset-backed securities (Senior Tranches)[1]	Exposed to somewhat different income streams than corporate bonds, so may diversify credit risk. Typically provide a yield pickup. Floating rate in some cases, which affords some inflation protection.	Moderate – LGPS Central Corporate Bond may at times provide some exposure, but a separate allocation is potentially worth considering.
Gold	Hedges inflation over the long-term, but the costs of maintaining the position (carry) and opportunity costs (generates no income) are significant. Can experience prolonged periods of under-performance and volatility..	Low/moderate – but likely to offer protection against certain tail risks such as a complete loss of confidence in sterling or collapse in financial markets.
Absolute return bond strategies	Returns are in theory uncorrelated with fixed income markets, therefore offer potential diversification.	Low – perform better when markets are volatile, but are hard to execute well, have significant tail risks and require strong oversight.
Equity protection strategies	Protects against a significant fall in equity values, but at the expense of foregoing a proportion of the equity upside.	Low – offers protection over the short-term (up to 2 years) providing derivative market pricing is conducive. Not recommended for long-term investors.

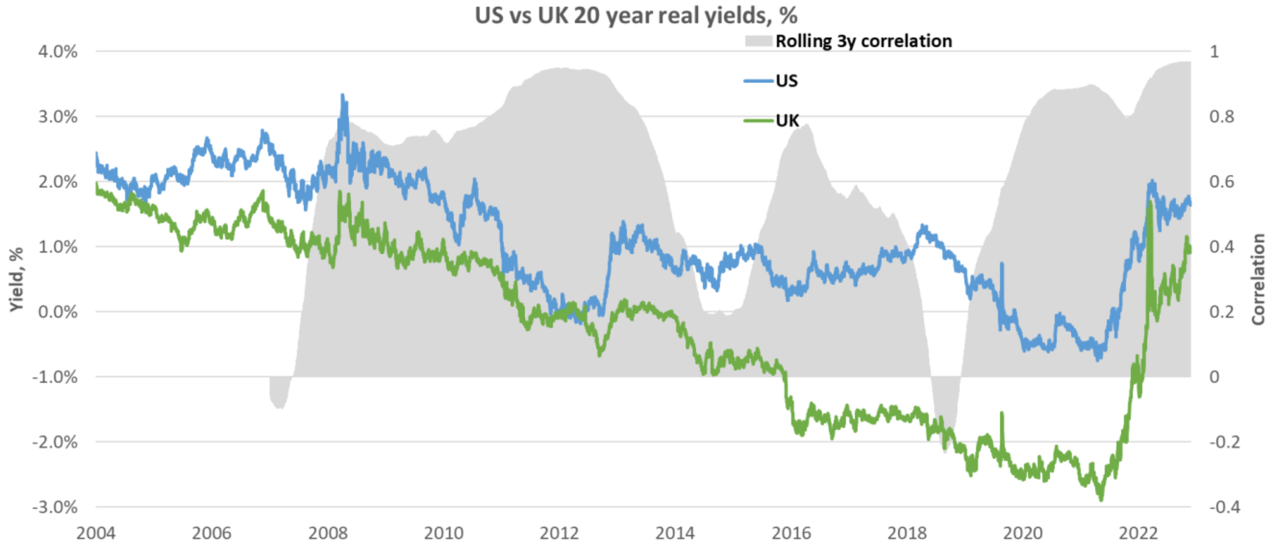
Introducing some of asset classes, where appropriate, would further diversify the portfolio and potentially improve risk-adjusted returns. However, it would also increase portfolio complexity and so we do not recommend an allocation at this stage. These are opportunities that would require further consideration, perhaps at a future strategy review.

Geographic allocation

LGPS funds have traditionally focused their sovereign bond portfolios on the UK, and for good reasons. They provide a better match with funds' sterling liabilities and returns are usually highly correlated with bonds issued by other Developed Market sovereigns (see Figure 3), especially once currency risk is hedged. However, correlations can fall at times of market stress, and it can then be helpful to have some exposure to overseas bonds.

The Fund's index-linked bond programme is benchmarked against an index-linked gilt index (FTSE Index-Linked Gilts All Stocks), but the mandate allows Aegon to allocate up to 20% in overseas bonds and the manager has the capability to do so. In practice, the manager has focused on index-linked gilts. We recommend the Fund engages with the manager to ensure overseas bonds are being used where appropriate to add value and/or provide downside protection, and to confirm that the limit in the mandate provides sufficient flexibility to do so effectively.

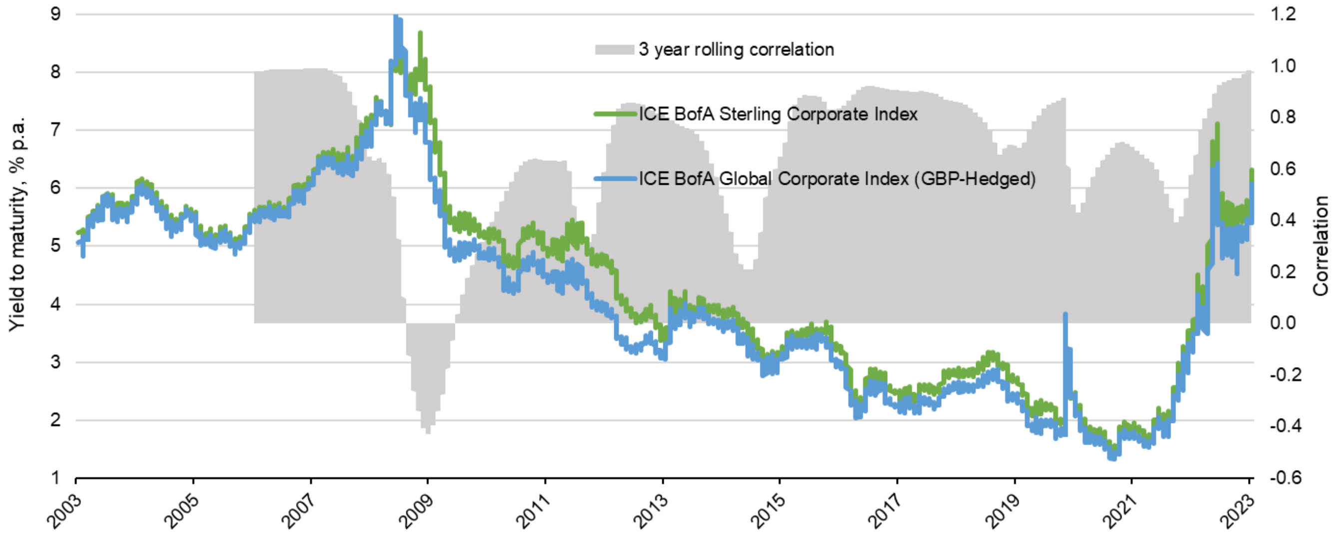
Figure 3: US vs UK real yields[21]



Geographic diversification in IGC has two dimensions: currency of issue and issuer domicile/geographic reach. Both are important as multi-national companies (such as International Airlines Group) typically have operations in many countries and issue bonds in multiple currencies. Credit markets are usually segmented by currency of issue and we consider the case for diversification on this basis too.

Like government bonds, sterling and overseas corporate bond yields are usually highly correlated, but correlations can fall during periods of economic/market stress (see Figure 4).

Figure 4: Sterling vs Global (hedged) IG corporate bond yields [22]



[21] Source: Bloomberg
[22] Source: ICE

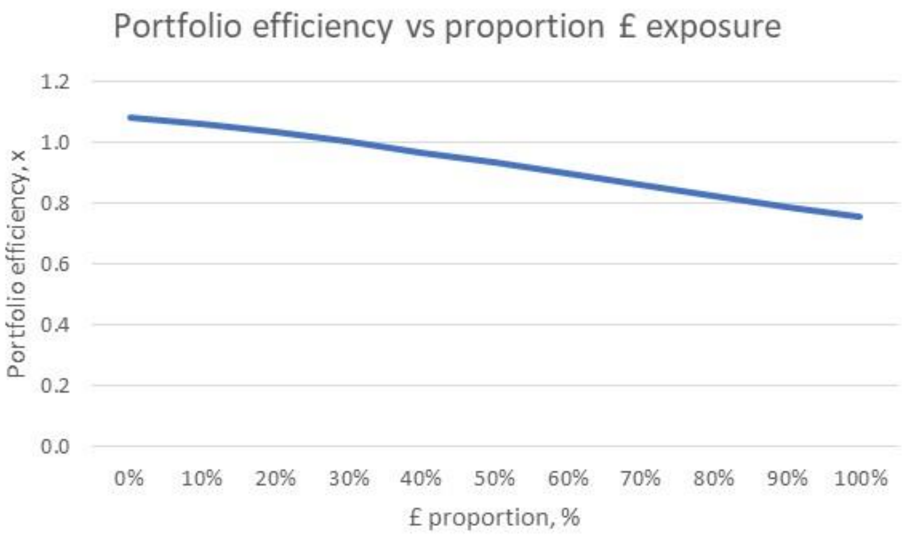
At such time the ability to invest in overseas credit can diversify risk. It also:

- Substantially increases the size of the opportunity set;
- May also improve liquidity;
- Enables active managers to exploit relative value opportunities such as credit spread differentials on bonds from the same issuer.

The net result can be to improve portfolio efficiency. Portfolio efficiency is defined as the return generated per unit of risk taken, and is a measure of risk-adjusted returns. The higher the efficiency the better.

We have tested the impact of varying the proportion of credit allocated to Sterling vs overseas issuance on portfolio efficiency. The results are shown in Figure 5 below for the period 01/01/97 to 31/05/23 but are insensitive to the observation period chosen. Past performance is an imperfect guide to future investment outcomes, but the results suggest that portfolio efficiency increases as the proportion of credit allocated to non-sterling bonds increases. We therefore recommend that the Fund does allocate a material proportion of its IGC exposure to overseas bonds, noting however that the analysis undertaken is insufficient to set a particular percentage.

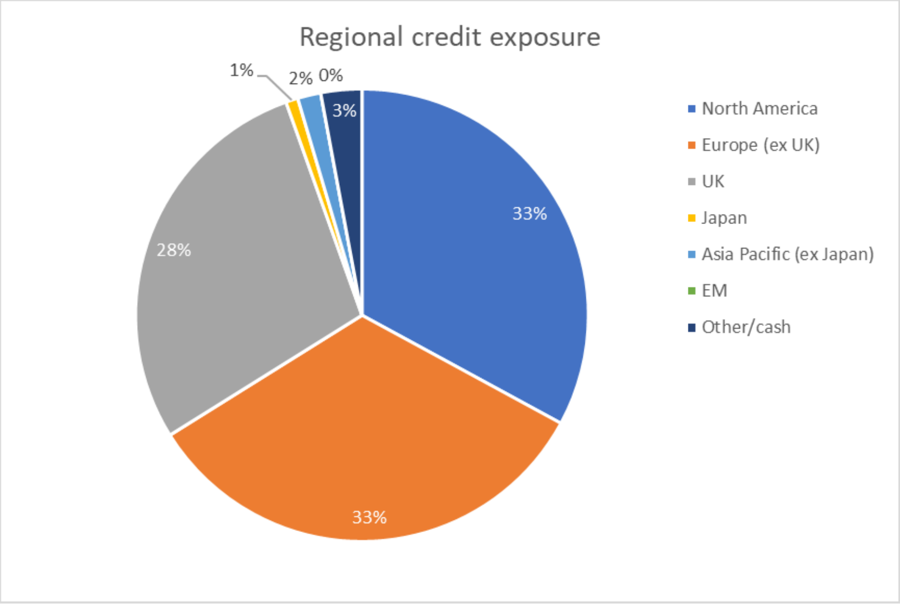
Figure 5: Portfolio efficiency vs the proportion allocated to sterling credit, 01/01/97 – 31/05/23[23]



The Fund invests in IGC via the LGPSC Investment Grade Credit and Aegon Global Short-Dated Climate Transition funds. LGPSC allocates 50% to sterling credit, 50% to overseas credit but the underlying managers have the flexibility to vary geographic allocations within their respective mandates. Aegon has the flexibility to allocate globally without restriction, but currently allocates 70% to overseas credit. The combined exposure to overseas credit is 56% and the portfolio is also well diversified by issuer domicile as shown in Figure 6 below. This allocation seems reasonable. A larger allocation to overseas credit could be justified, but we see not pressing need to change the current structure.

[23]Source: ICE monthly index returns from Jan 1996 to May 2023 and Hymans Robertson calculations

Figure 6: Credit exposure by issuer domicile[24]



Active vs passive management

Credit. Like listed equities, IGC mandates can be managed actively or passively. We believe the case for active management in IGC is stronger than it is in listed equities, for the following reasons:

- There are wide range of ways to add value through active management in corporate credit. The most important is by avoiding issuers which default. Losses are realised when issuers default, whereas in listed equity markets, there is a chance that underperforming stocks will bounce back.
- Active management also allows ESG considerations to be taken into account in security selection.
- Conventional corporate bond indices have intrinsic flaws. They give more weight to the most indebted companies which all other things being equal are more likely to default. Active managers can reduce this risk.
- It is fairly common for issuers to be ejected from the relevant index following a rating downgrade which means passive investors are forced to sell at the wrong time and forego returns if the issuers' ratings improve. It has been estimated that this costs passive investors 30bps p.a. in returns[25].
- Most corporate bond indices have multiple bonds from the same issuer which means it is very hard for passive investors to fully replicate the indices. As a result, their portfolios may not be fully representative of the index they are tracking.
- Tracking indices with large numbers of bonds requires more trading, particularly when tracking short-duration bond indices. Lower liquidity means each trade is more expensive than in listed equity markets. Together, these factors mean higher transaction costs for passive funds.

Passive management strategies do have some benefits, such as lower fees and less manager risk, and buy-and-maintain credit strategies now exist, which combine some of the advantages of both fully active and passive management approaches.

In a buy-and-maintain strategy, the manager invests in high-quality bonds with the focus on issuers who have a very high likelihood of meeting all interest and principal repayment obligations in full, and bonds with highly

[24] Source: manager reports
[25] "Leaving Money on the Table", Kiesel and Dragesic, PIMCO Global Credit Perspectives, May 2017

predictable payment profiles (ie no optionality). The manager continues to monitor credit quality but the bonds are usually held to maturity, unless the credit quality of the issuer deteriorates sharply, which means transaction costs and management fees are lower than for fully active strategies. Buy-and-maintain funds can be managed to a defined term or on a rolling maturity ("evergreen") basis, although the latter requires continual re-investment which increases costs. The strategies are typically benchmark-agnostic which provides the flexibility to vary geographic and sector allocation so as to minimise credit risk.

The advantages of the buy-and-maintain approach are:

- Highly predictable cashflows which allows solutions to be designed with cashflow profiles that match liabilities;
- Allows investors to "lock in" current yields which are high relative to recent history;
- Strong downside protection – minimises the default risk inherent in passive strategies, and reduces the manager risk associated with fully active strategies;
- Lower turnover than fully active or passive strategies, so transaction costs are lower too;
- Lower management fees than fully active strategies (typically 10-15 bps p.a. for institutional size commitments).

Buy-and-maintain strategies are popular with investors following a cashflow-driven investment style who typically invest via segregated accounts. Pooled funds are also available for investors who are less concerned with meeting immediate cash needs, but value the other benefits of the approach.

Both the LGPSC Investment Grade Credit and Aegon Global Short-Dated Climate Transition funds employ fully active strategies. Given the above arguments, we are comfortable with this approach. We considered an allocation to an evergreen buy-and-maintain strategy for say 25% of total IGC exposure but would not recommend it at this stage, for the following reasons:

- The Fund's liquidity position remains strong so there is no pressing need to adopt a cashflow-driven investment style;
- There is nothing stopping LGPSC and its underlying managers locking in current high yields, although we accept that this would involve the managers taking significant duration risk which is not the main focus of their investment strategies (especially for Neuberger Berman);
- We remain comfortable with the investment strategies and managers of both existing credit funds;
- Performance since the Fund invested has been somewhat disappointing, but the outlook for both funds is more positive for the reasons outlined in Section 3 above;
- We have no concerns about the level of active risk being taken by the two managers;
- Management fees on existing funds are already comparable with those typically charged by buy-and-maintain credit managers;
- A 25% allocation would represent less than 2% of total Fund assets so the potential impact on overall investment outcomes is unlikely to be sufficient to justify the additional complexity.

Index-linked bonds. The ILB market is generally considered to be large, liquid and efficient and therefore unsuitable for active management. However, the market is dominated by insurers and corporate pension funds which tend to buy and hold assets, thereby reducing liquidity, and invest to match liabilities rather than maximise returns. We also note that the primary issuance market is not completely efficient, particularly when the UK government is issuing large volumes of debt. These features create opportunities for active managers. Active managers can also exploit off-benchmark opportunities such as overseas sovereign and corporate index-linked bonds.

The Fund's ILB programme is actively managed. Performance since inception has been similar to the benchmark since inception (relative return +0.4%% p.a.[26]) is in line with expectations and the level of active risk being taken has been fairly low too (tracking error 2.3% p.a.). Subject to the observations made in Section 3, we remain comfortable with the investment strategy employed by the manager. On that basis, we recommend the Fund retains the current approach.

Climate change implications

Full consideration of the implications of climate change on the Fund's protection portfolio, and the actions that may need to be taken to achieve the Fund's Net Zero objectives, was outside the scope of this review. However, we outline below some of the issues the Fund may need to consider.

The climate risk profile of listed IGC can be quite different from large cap listed equities, largely due to differences in sector composition of the related market indices, see Table 9. The climate risk of the Fund's ILB investments reflects GHG emissions in the wider UK economy; there is nothing the Fund can do unilaterally to decarbonise this part of its portfolio.

Table 9: Climate metrics for selected asset classes[27]

Asset class	£ credit	UK equities	Global credit	Global equities
WACI, tC02e	81.2	103.2	240.0	149.7
Green revenues, %	5.1	2.7	3.4	5.3

It follows therefore that decarbonisation of the protection portfolio, though it accounts for only 8% of total Fund assets, will require focus during 2024 .

Carbon footprinting of listed credit has historically lagged listed equity despite the issuers being largely the same. Aegon reports emissions and emissions intensity for the Global Short-Dated Climate Transition fund, but the LGPSC Investment Grade Credit fund has not yet been benchmarked.

The availability of investment solutions which accelerate decarbonisation has likewise been more limited in listed credit than listed equity. This is changing and we are aware of managers offering products in the following categories:

- ESG-tilted passive strategies tracking indices in which capital is tilted away from high emissions companies and/or towards those with significant involvement in sustainable products and services.
- ESG-integrated active strategies in which managers are required to take ESG factors into consideration in their investment processes. Both LGPSC and Aegon's IGC strategies fall into this category.
- ESG-thematic active strategies in which managers use sustainability themes including climate change to guide their search for investment opportunities. In this category, delivering financial returns remains the primary objective.

[26] Source: Portfolio Evaluation, 1Q23. Note: the manager reports a relative return since inception of -0.13% p.a.

[27] Source: MSCI, 2023 except global credit (2022). Indices used are FTSE All Share, MSCI All World, Barclays Global Aggregate, ICE BoA Sterling non-gilt

- ESG-impact funds which pursue strategies with dual objectives of delivering financial returns and achieving sustainability impacts. Some strategies in this category require a trade-off between financial returns and sustainability impact: this may be because of an over-supply of capital or because the impacts targeted are inadequately rewarded (more common in social impact strategies).

The potential impact on ESG/climate metrics increases across this spectrum, with ESG-tilted passive typically offering the lowest impact and ESG-impact strategies the greatest. All are potentially applicable to the Fund, although the trade-off between financial returns and sustainability impact inherent in some ESG-impact strategies can be challenging for LGPS funds given the fiduciary obligations to ensure financial returns are sufficient to meet benefit payment obligations at all times.

Given the above, we recommend the Fund considers taking the following actions regarding the decarbonisation of its protection portfolio:

- Work with LGPSC to include corporate bonds in its 2023 climate risk report and the index-linked sovereign bonds in the 2024 report, taking into account the new guidance from the Assessing Sovereign Climate-Related Opportunities and Risks initiative (ASCOR) on accounting for sovereign GHG emissions;
- Determine an appropriate approach for carbon accounting for the Fund’s cash investments and FX hedging programme;
- Further engage with investment managers to ensure they are taking appropriate action on capital reallocation to reduce portfolio emissions, and are engaging with underlying issuers to achieve real-world emissions reductions, drawing where appropriate on new guidance on stewardship provided by the Institutional Investors Group on Climate Change;
- Model the prospective emissions and exposure to climate opportunities of the Fund’s protection assets taking into account the changes proposed by this review and the “organic” decarbonisation rate of the markets in which the Fund invests;
- Develop short-/medium-term decarbonisation targets which are consistent with the Fund’s long-term Net Zero goal but also realistic given the Fund’s baseline position and available investment solutions
- Consider what further changes (if any) should be made to the protection portfolio in order to deliver the agreed targets.

5 Implementation

Summary of proposed changes

Table 10 below summarises revised target allocations for the Fund's protection portfolio. At this stage, only one change is being recommended: a reallocation of capital of 1% of total Fund assets from the Aegon Index-linked Bond programme to the LGPSC Investment Grade Credit fund.

The change fine-tunes the balance between the protection against higher than expected long-term inflation provided by the former and the higher yield generated by the latter, and is expected to improve long-term funding outcomes. It is also supportive at the margin of the Fund's pooling objective.

In addition, a number of potential changes to the Fund's currency hedging arrangements have been identified, but these require further investigation with the Fund's managers before they can be confirmed and scheduled.

Table 10: Current and proposed target allocations

Manager	Fund	Current target	Proposed target	Difference
LGPSC	Investment Grade Credit	2.25%	3.25%	+1%
Aegon	Index-linked Fund	4.5%	3.5%	-1%
Aegon	Short Dated Climate Transition Fund	0.5%	0.5%	-
Cash	Cash (including FX hedging collateral)	0.75%	0.75%	-

Implementation next steps

The switch from the Aegon Index-linked Bond programme to the LGPSC Investment Grade Credit fund should be a straightforward transaction. We would not expect there to be any material overlap in holdings, so assets in the former will need to be sold by Aegon to fund the subscription to the latter. Aegon should coordinate asset sales with any ongoing portfolio management activity in order to minimise transaction costs. We assume the process will be managed by the Fund.

The timing of the transaction requires further consideration. Our current short-term outlook for index-linked bonds is more positive than it is for investment grade credit. We therefore recommend that the switch is delayed until the relative attractiveness of the latter improves. We recommend the position is reviewed quarterly.

Regarding the potential changes to currency hedging arrangements, the next steps are to:

- Confirm with the managers of underlying funds whether or not they would be prepared to offer sterling hedged share classes to facilitate the proposed changes;
- Discuss with Aegon the practical implications of extending their programme to cover the proposed changes.

Appendix 1 – Portfolio Analytics

The table below summarises portfolio characteristics referred to at various points in this paper. All data are as at 31 March 2023.

Manager[28]		LGPSC	Aegon	Aegon	Total
Fund details	Fund	Investment Grade Credit	Index-linked Fund	Short Dated Climate Transition Fund	n/a
	Active/Passive	Active	Active	Active	n/a
	Benchmark	LGPSC Corp Index + 0.8%	FTSE All Stocks Index Linked Index	SONIA 3 Month +1.25% (GBP)	n/a
	Target outperformance	0.80%	0.00%	1.25%	n/a
	Target allocation	4.5%	2.5%	0.5%	n/a
	Inception date	Apr 20	Dec 13	Mar 21	n/a
Performance (%)	Absolute performance 12m	-10.8	-26.1	-1.1	n/a
	Absolute performance SI	-3.5	4.6	-1.1	n/a
	Relative performance 12m	-1.8	0.6	-5.1	n/a
	Relative performance SI	-1.6	0.4	-3.9	n/a
	Performance vs peer group 12m	n/ a[3]	3.5 (4th quartile)	-0.1 (2nd quartile)	n/a
	Performance vs peer group SI	n/a	1.8 (outperformed peer group)	0.1 (3rd quartile)	n/a
	Tracking error SI	n/a	2.3	2.7	n/a
Asset type (%)	ABS	0	0	0.9	0.1
	Sovereign	5	98.3	0	55.7
	Supra-national	0	0	2	0.3
	Corporate	90.9	0	92.3	41.1
	Other/cash	4.1	1.7	4.8	2.9
Issuer location (%)	North America	34.9	0%	27.8	14.8
	Europe (ex UK)	30.1	0.00	41.2	15.0
	UK	29.8	98.3	24.9	66.8
	Japan	0.9	0.00	0.8	0.4
	Asia Pacific (ex Japan)	2.1	0.00	0.5	0.7
	EM	0	0.00	0	0.0
	Other/cash	2.2	1.7	4.8	2.3
Credit rating (%)	AAA	2.7	0.00	0.9	1.0
	AA	6.6	98.3	6.7	57.0
	A	33.3	0.00	37.7	15.6

28 Source: Q1 2023 manager reports, Q1 2023 PEL and emails from the managers on 8 and 9 June 2023

	BBB	53.9	0.00	47.3	23.4
	BB<	0.1	0.00	2	0.3
	Unrated	0.2	0.00	0.6	0.1
	Other/Cash	3.1	1.7	4.8	2.5
Modified duration		6.67	17.3	2.4	n/a

Appendix 2 – Asset Class Views

Our current tactical views of asset class returns over the next 12-24 months (as at June 2023) are summarised below for different classes of protection assets:

- **Investment Grade Credit.** Corporate balance sheets are strong, but earnings forecasts remain vulnerable to further downgrades as global economic activity slows and profit margins shrink. The full impact of previous interest rate hikes is yet to be felt, which could put further pressure on debt affordability. However, the impact will be less severe and take longer to materialise in investment-grade markets than in speculative-grade markets. The BoE has now concluded its corporate bond sales programme; however, the ongoing sale of gilt holdings poses a technical headwind to the underlying rates market.**Outlook: neutral**
- **Fixed Interest Gilts.** Even allowing for elevated near-term inflation, slightly higher inflation over the medium term, and the uncertainty associated with that outlook, 10-year nominal gilt yields of 4.6% pa look attractive versus our assessment of fair value of around 3.5% pa. We see the best value in gilt yields at maturities out to 20 years, given a sharp fall in longer-term forward real and nominal yields beyond. However, quantitative tightening and heavy issuance make for a very fragile technical backdrop.**Outlook: neutral-positive**
- **Index-linked Gilts.** Ten-year index-linked gilt yields have also risen to reasonably attractive levels of 1.1% pa. Very weak real growth forecasts and sticky inflation should help keep a lid on real yields. Gilt-implied inflation, as measured by the difference between nominal and index-linked yields of the same maturity, indicates short-dated index-linked gilts offer decent value but suggests a relative preference for nominal gilts at medium-to-longer terms. **Outlook: positive**