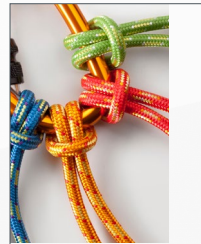


2017 valuation toolkit

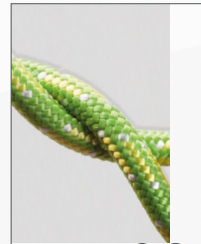
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Improving funding outcomes for employers



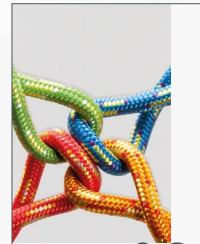
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Our valuation principles



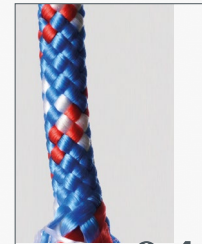
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Key funding decisions



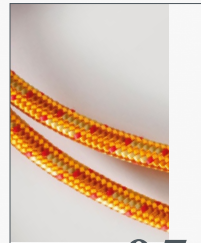
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Measuring your funding level



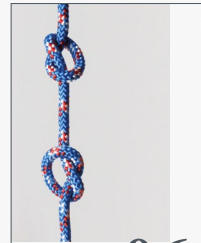
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Employer risk based funding



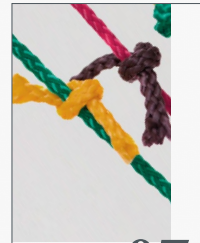
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Understanding ALMs



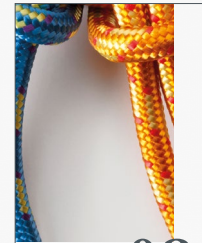
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Our valuation principles

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Our valuation principles

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Background

We are delighted to introduce a series of short notes, designed to help our clients navigate the 2017 valuation process. We understand that a successful valuation has to be a team event, drawing on the specialised expertise of many of your team and ours. In this series of notes, there will be something for everyone. Some notes address funding methodology, some address technical issues and others address operational issues, including the provision of and validation of valuation data. We hope these guides serve as a useful reference for funds as they approach the most challenging and scrutinised LGPS funding valuations ever.

Our valuation commitment to clients

We provide valuation advice to more funds in the LGPS than any other advisor. We have a team of 13 qualified actuaries working with 49 different LGPS funds. These funds and their advisors face similar challenges but each fund has different priorities and objectives, bringing their unique perspective and expertise to bear on issues. Our actuaries work closely with their funds and each other and are continually identifying and refining the best ideas and solutions.

We don't impose a valuation approach on any fund - each fund's valuation reflects their own beliefs - but we've identified a common set of principles for all LGPS valuations that we believe help you to achieve the best outcomes for your fund and your employers. We believe they drive a better valuation process and better funding results.

Our valuation principles

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Our approach builds a funding plan that is simple, transparent and affordable for employers ”

⚙️ Our principles

🔍 Transparent information

- ◆ all information is presented clearly and objectively
- ◆ no information is hidden from you, allowing you to demonstrably make more informed and accurate decisions

📊 3d view

- ◆ we help you look at the bigger picture, taking contribution rates, investment strategy and employer covenant all into account
- ◆ we view the valuation as a 3 year healthcheck against your long term objectives, rather than making decisions based on a snapshot view

⚙️ Efficient process

- ◆ our automated tools are driven by market leading technology
- ◆ end-to-end process is time and cost effective

📈 Results

⚡ Faster results

- ◆ process is complete within 2 weeks
- ◆ cost savings are passed on to you



👍 Better outcomes

- ◆ deliver more manageable pension costs for your employers and more secure pensions for your members
- ◆ be amongst the top performing funds in the UK



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Key funding decisions

02



Key funding decisions

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Background

The triennial valuation is your fund's budgeting exercise. The purpose of the valuation is to review your funding strategy and ensure that you have a contribution plan and investment strategy in place that enables your LGPS fund to meet your projected liabilities. Budgeting exercises for open defined benefit pension funds are complex. Firstly, the projected budgeting period is very long; benefits earned in the LGPS today will be paid out over a period of the next 80 years. Secondly, the LGPS remains a defined benefit scheme so there are large uncertainties in the final nature and cost of the benefits to be paid. Finally, in order to keep contributions low, LGPS funds typically invest in higher return investment strategies which include high levels of volatility and risk.

Our valuation approach recognises the uncertainties and risks posed to funding by these factors and provides a framework for funds to set clear funding targets and manage their funding risks.

We believe that the key funding decisions can be addressed by answering the following three questions.

- 1 What is your Funding Objective?
- 2 How long do you want to give yourselves to get to this target?
- 3 How sure do you want to be that you will reach the target?

Key funding decisions

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What is your Funding Objective?

In setting the long term funding objective, we ask that funds think about the balance between the level of investment risk and expected return that they would be most comfortable with if the fund was fully funded and how that interacts with the level of contributions required and, importantly, the volatility of the contributions. For example, if there was no deficit or surplus, a fund could be run to target an employer contribution rate to cover future service benefits with an associated required investment return (e.g. CPI + 3% p.a). We call this a “steady state”. Lower contributions would require higher investment returns and vice versa. The higher the investment return that is required, the higher the level of investment risk required and the higher the contribution volatility.

At the valuation, we work with each fund to determine its own steady state funding objective. Views on what represents an affordable contribution rate and tolerances for investment risk and contribution volatility vary between LGPS funds and we provide detailed modelling showing how outcomes can vary for each fund to help decision makers analyse this important choice.

Expressing your Funding Objective

The example above used a measure of CPI plus 3.0% p.a. to express the investment return required in the steady state to cover future service benefit accrual. Some advisors’ entire valuation approach is based on what to use as a measure of funding level. We continue to prefer to use “gilts plus” as our method of measuring a daily funding level or expressing a funding objective or steady state funding target, see guide 3, “Measuring your Funding Level”, for the detailed reasoning. However, we don’t think that how you express your objective

is nearly as important as understanding the interaction between your investment strategy and contribution plan, so we happily work with funds who express their funding objective in any meaningful way!

Have you reached your Funding Objective?

Most of our LGPS funds monitor their funding level continuously using one of our monitoring tools, such as online FLR or 3DA. At the valuation, we take account of the updated membership information and any changes to assumptions to project refreshed cashflows and rebase the funding level. Most LGPS funds are not at their funding objective – they have a deficit.

Key funding decisions

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How long will you give yourself to get to your Funding Target?

You need to decide over what period you will target paying off any deficit. LGPS funds are open both to new members and future accrual so there is no natural end date by which a deficit must be made good. When deciding a deficit recovery period LGPS funds will have regard to both affordability and long term cost efficiency.

Ideally, pensions would be funded over the working lifetime of the member. In the interests of contribution stability LGPS deficits are often spread over a longer period. In deciding the appropriate period, consideration should be given to the covenant, cashflow position and increasingly scrutineers are interested in inter-generational fairness and ensuring costs are not unreasonably deferred.

How sure do you want to be that you will reach your Funding Target?

Funds will need to rely on both contributions and investment returns to make good deficits and return to full funding. As with the long term funding target, the more we can rely on investment return, the less we need to pay in contributions. However, to generate high investment returns we need to take extra risk – which can lead to short term volatility and higher deficits.

In order to model the best deficit recovery plan for you, we use an asset liability model (“ALM”) with both inputs and outputs specifically tailored for LGPS funds. We refer to this model as **comPASS**, **com** Prudence **A**ffordability **S**tability **S**tewardship.

ALMs are discussed in more detail in guide 5 - “Understanding ALMs”

Key funding decisions

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We use this model to compare the projected results for the fund when different combinations of investment strategy or contribution strategy are implemented. Decision makers are presented with key metrics as in the table below, which enables them to choose the combination of contribution and investment strategy that gives both an acceptable probability of meeting the funding objective over the required time horizon and manages the downside risks.

Contribution Strategy	Investment strategy	Prudence/Solvency		Affordability/Long Term Cost Efficiency	
		Likelihood of full funding in 2038	1 in 20 downside funding level in 2038	Median contribution rate required in 2038	Highest median contribution rate during the next 21 years
Strategy A	Current	71%	66%	15%	19%
Strategy B	Current	74%	73%	10%	32%
Strategy A	Lower risk	50%	57%	17%	23%

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Measuring your funding level

03



Measuring your funding level

Home

Background

The formal triennial valuation is an opportunity for funds to perform a health check of progress against its funding objective. As nearly all funds will be targeting 100% funding, the current funding level provides a useful metric for this health check.

There are different approaches to measuring the funding level and this topic has generated considerable debate in the LGPS. At Hymans Robertson we use the 'gilts plus' approach. This guide sets out why we believe this is the best approach for the LGPS.

Why use the 'gilts plus' approach?

Under the gilts plus approach the discount rate is set by considering the expected return on the lowest risk investment (government bonds or 'gilts') and applying an additional margin to allow for the greater returns that are expected to be generated by the riskier assets held in the fund's actual portfolio (e.g. equities, property, etc).

This margin is known as the Asset Outperformance Assumption ("AOA"). We continue to use the 'gilts plus' approach for the following reasons:

- ◆ It is a justifiable approach that the return on a portfolio of investments should be equal to the return on the least risky asset class, plus the extra return due for taking more risk. It relates the discount rate clearly to the level of investment risk.

- ◆ It is based on objective and observable market data with no subjective smoothing.
- ◆ It is consistent with the assumptions used by all LGPS actuaries when employers (excluding contractors) cease to participate in a LGPS fund. At this point, liabilities are valued on a prudent 'gilts' basis which is equivalent to changing the AOA to 0%.
- ◆ It is commonly used by private sector pension schemes in the UK and abroad. In the UK it is endorsed by the Pensions Regulator (in preference to other methods).

Measuring your funding level

The most common criticisms we hear of this approach are that the gilt yield is volatile so the funding level is volatile and the LGPS was costed on a different basis (3% p.a. real). The volatility of the funding level reflects the reality that funds are invested in risky assets whose value is volatile. Volatility is not necessarily a problem as this does not impact on contribution requirements and, by reflecting market movements when they happen, a fund can take advantage of de-risking opportunities that are hidden by other methods. Additionally, contribution stability can be achieved without artificially smoothing funding levels.

The basis used to cost the LGPS was the Government Actuary's Department's basis for unfunded public sector schemes. Rather than an estimate of future investment returns it is based on expectations of the growth of the UK economy. The method adopted doesn't need to be related to the assets held because these schemes have no assets. This is a crucial difference from the LGPS. All LGPS funds hold different assets, and increasingly these are based overseas, so setting an assumption based on the UK economy alone does not seem to be a sensible choice.

Other possible approaches

Consumer Price Inflation ("CPI") plus

Under the CPI plus approach, the discount rate is set relative to the assumption for long-term future inflation (as measured by CPI). We believe this approach is not suitable for an LGPS fund's discount rate assumption because:

- ◆ It is not clear that investment returns are correlated to price inflation in general or CPI in particular. Additionally, CPI is a measure of UK inflation and therefore is not appropriate to estimate returns on overseas assets.
- ◆ This approach is not market-related. As the gap between the discount rate and inflation is constant, the real discount rate is constant. This means that the value of liabilities is independent of market conditions and therefore inconsistent with the value of assets. Therefore market-related opportunities cannot be identified.
- ◆ Counterintuitively, under this method, if CPI inflation increases, increasing the future cashflows from the fund, there is no corresponding increase in the value placed on the liabilities. This means this real risk to funding is obscured.
- ◆ Measuring CPI is tricky because (unlike RPI) there exists no market instruments that can be used to derive an implied value. The need to estimate the gap between RPI and CPI means that there is a further subjective element of the discount rate.

Measuring your funding level

'Risk-based' discount rate

This model sets different discount rates for different employers in the fund based on how much of a perceived risk they pose. It is based on a model of future investment returns which gives a distribution of discount rate assumptions. The discount rate for a given employer is the highest rate that can be achieved with a given probability. The probability used depends on the perceived level of employer risk; the higher the risk, the lower the discount rate. We believe this approach is not suitable because:

- ◆ Actual future investment returns will be the same for every employer in the same investment strategy. It does not make sense to assume different investment returns for different employers when it is impossible for the returns to differ in practice.
- ◆ This approach only reflects risk on the asset side of the funding equation, the liability side is ignored e.g. higher than expected inflation (unlike our compASS model see guide 5).
- ◆ The distribution of long-term discount rates used do not fully reflect current market conditions. This leads to smoothed funding levels and so market related opportunities cannot be identified.

Asset-based discount rate ('economic model')

Under this model the discount rate is a composite of the expected return on each type of asset class. This is derived from assumptions about yields and growth and not on market prices. We do not believe this is an appropriate way to set the discount rate for the fund because:

- ◆ It usually relies on smoothed data (i.e. market conditions over a six month period or even longer for some of the assumptions) and so requires the assets to be smoothed as well to avoid inconsistency. Smoothing hides market movements that can reveal de-risking opportunities.
- ◆ The model relies on a larger set of assumptions so is more difficult to evidence and justify than a single AOA assumption and lacks transparency in how the overall rate is derived.

As part of our 2017 valuation preparations we reviewed all possible approaches for measuring the funding level and came to the conclusion that, although not perfect (there is no such thing), a gilts plus approach remains our preferred method of measuring liabilities and funding levels.

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Employer risk based funding

04



Employer risk based funding

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Background

Traditionally formal valuations of the fund were a calculation exercise with contribution rates being set for all employers within the fund based on a single set of assumptions and a mathematical formula (a “deterministic approach”). The disadvantage of a deterministic approach is that it does not allow the fund, employer or fund actuary to assess the risk associated with the proposed contribution rate. Risk in this context means the likelihood that the employer will not achieve their funding target over an appropriate time period with regard to the characteristics of the employer.

With increased scrutiny on the LGPS, and the requirement to consider covenant strength of the employer when setting contributions, there is an increased focus on using the valuation as an opportunity to assess risk.

Therefore this part of our guide sets out our new approach to setting contribution rates for employers participating in your fund by adopting a “risk-based” approach. The risk based approach allows for thousands of possible future economic scenarios (rather than a single set of assumptions) when assessing the likelihood of contributions being sufficient to meet your funding obligations. This allows the fund to quantify the risk of an employer not meeting their funding target given a proposed contribution plan and investment strategy, e.g. if the employer was fully funded in 4000 out of 5000 possible future economic scenarios, there would be an 80% chance of them meeting their funding target.

Employer risk based funding

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Why adopt this approach?

There are many more employers participating in the LGPS and they are more diverse than ever before. They have different funding profiles, varying funding levels, net cash flows and maturity and have different funding objectives. For example, one employer may be well funded, consist purely of active members and will continue to participate in the fund whereas another may have few active members, be poorly funded and be planning to exit the fund in the near future. For each of these employers, the contribution and investment strategy that will help them best meet their obligations to the fund will be different.

Tailoring contribution and investment strategies for employers in the fund reduces the risk of adverse outcomes for employers and the risk of complaints against the administering authority (and the associated reputational damage). A 'one size fits all' contribution and investment strategy is not fit for purpose in today's LGPS environment. However, it is impractical to create a bespoke strategy specifically designed for every employer following an analysis of the circumstances of each.

Although employers in the fund are very diverse, there are groups of employers in the fund which have some similarities in terms of funding profiles and funding objectives. Therefore, instead of needing to set bespoke contribution and investment strategies for each individual employer, the fund could set strategies for groups of similar employers. This approach is seen as the middle ground solution to implementing tailored contribution and investment strategies.

To enable this approach, the fund needs to analyse the funding profile of each employer and then group those that are similar.

Risk-based contributions

This approach ensures stability and affordability of contributions for employers while providing a robust approach that assures the fund that employer contributions are sufficient to meet the employer's funding target.

Setting contribution rates using a risk based approach requires the fund to consider for each employer:

- 1 The employer's funding target
How long the employer has to reach the funding target (usually the deficit recovery period)
- 2 An appropriate likelihood of meeting the target (or 'likelihood of success') e.g. 2/3rds, 75%
- 3

Further details of this approach are provided in guide 2, "Key Funding Decisions".

Employer risk based funding

The first two decisions should be documented in the fund's Funding Strategy Statement and using a pragmatic approach are a function of:

- ◆ Employer body type
- ◆ Approach to new entrants

Setting an appropriate likelihood for each employer requires further analysis. To ensure that appropriate funding strategies are set under this risk based approach, the fund needs to understand the risk posed to the fund and wider business outlook/financial strength for each employer. Risk in this context means the likelihood that the employer is unable to meet its funding target and this failure has a material impact on other employers in the fund (who will need to make good any funding deficit that cannot be met by the employer).

To understand the risk posed to the fund, the following information/metrics may be analysed by the fund actuary:

- ◆ Liability profile including funding level, net cashflow, maturity, magnitude of funding deficit/surplus; and
- ◆ Security provided to the fund in the form of a guarantee or an additional asset

Considerations of financial strength outside the fund by the fund's Officers may focus on:

- ◆ Inspection of company accounts/financial statements;
- ◆ Evidence provided that there are no competing calls for cash;
- ◆ Formal covenant analysis;

- ◆ Understanding the business outlook; and
- ◆ Outlook for the sector the employer participates in.

Combining the above factors will allow the fund to build up a comprehensive picture of each employer in the fund while maintaining a pragmatic and cost-effective approach.

More detail of the model used to assess the risk-based contributions is provided in guide 5 - "Understanding ALMs"

The results

Each employer in the fund should have a funding plan with an aligned contribution and investment strategy, which maximises the probability that they will meet their own tailored funding objective and reflects their risk profile both within and outside the fund.

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Understanding ALMs

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Understanding ALMs

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Background

ALM stands for an Asset Liability Model. They have become widely used in the actuarial world to project the behaviour of assets that are invested to meet liabilities, like in pension funds. The key feature of an asset liability model is that they show how the funding outcomes for a pension fund are dependent on the interrelated behaviour of both the assets and liabilities in different economic scenarios. This enables the pension fund to optimise both the asset and contribution strategy to meet the liabilities and identify key funding risks. At Hymans Robertson, we use an LGPS specific ALM called comPASS as part of the valuation process to provide funds with extra information to inform the valuation decision making.

How does an ALM/ comPASS work?

Cashflows

Our ALM, comPASS, is specifically tailored to work for LGPS funds. The actuarial team use the membership data at the valuation to project the liability cashflows for the fund, that is, the benefits that have to be paid to members in the future and the contributions that will be received from members. As the LGPS is an open fund, both to future accrual and to new members, a projection of benefits to be paid in the future to new members not yet in the fund is also included.

Testing Contribution and Investment Strategies

We input into comPASS proposed combinations of investment and employer contribution strategy with the aim of testing which combinations produce the best outcomes for the fund under different possible future economic conditions.

For employer contributions we can model the effectiveness of different types of contribution patterns including:

- ◆ Volatile market based contribution rates;
- ◆ Stabilisation mechanisms, where changes in employer contributions are constrained to a maximum increase or decrease each year;
- ◆ Payment of lump sums in the fund;
- ◆ Fixed contribution rates; and
- ◆ Contribution rate caps.

Understanding ALMs

Home

We can also test the impact of changes in employer membership over time if significant workforce changes are anticipated.

We use comPASS to test the impact of different investment strategy decisions such as;

- ◆ Different asset allocations;
- ◆ Impact of hedging;
- ◆ Impact of diversification; and
- ◆ Setting triggers for changes in level of investment risk.

Scenarios

The different economic conditions are modelled using our proprietary economic scenario generator model (ESS). The model is stochastic, meaning it uses probability distributions to project a range of 5,000 different possible outcomes for the future behaviour of asset returns and economic variables, such as inflation and interest rates up to 30 years into the future.

Some of the parameters of the model are dependent on the current state of financial markets and are updated each month (for example, the current level of equity market volatility) while other more subjective parameters do not change with different calibrations of the model.

Key subjective assumptions are the average excess equity return over the risk free asset, the volatility of equity returns and the level and volatility of yields, credit spreads, inflation and expected (breakeven) inflation, which affect the projected value placed on the liabilities and bond returns.

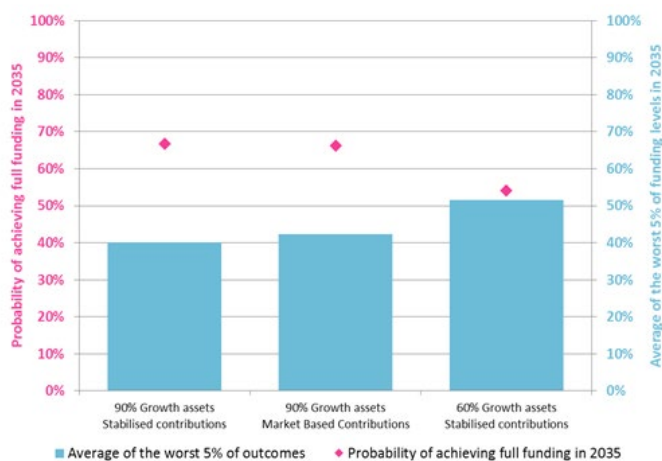
The model includes scenarios which result in both very positive outcomes for LGPS funds and scenarios which result in very negative outcomes for LGPS funds. While these models allow for the possibility of scenarios that would be extreme by historical standards, including very significant downturns in equity markets, large systemic and structural dislocations typically are not captured by these models.

Understanding ALMs

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Output from comPASS

Output from comPASS shows what happens to the funding level and other key metrics under each of the 5,000 scenarios and we can capture these metrics from comPASS at any future point. We summarise the output for decision makers using charts like the one shown below.



The pink diamonds and blue bars report the projected performance of the fund following 5000 different scenarios given different investment and contribution strategies shown along the x-axis. The pink diamonds show the percentage of the 5000 outcomes where the funding level was greater than 100%. The blue bars show a measure of downside risk – the average funding level in the worst 5% of outcomes. As well as funding level, we can analyse future employer contributions requirements and project funding deficits. We can also model individual employers or groups of employers.

Advantages of using an ALM

The key advantage of using an ALM model like comPASS as part of the funding valuation is that it allows you to consider the contribution strategy and investment strategy together in the same process, rather than the traditional methodology of setting the contributions first and then considering the investment strategy. This leads to optimised strategies working together and considerable efficiency savings. The ability to consider 5000 scenarios rather than relying on a single set of valuation assumptions about the future results in a far more robust funding plan.

Governance

The model can help provide useful information to aid decision makers, but it's important to understand the limitations of the model and the extent to which the output of the model is sensitive to the calibration and choice of parameters. If you are using this type of modelling to set employer contribution rates, it's also important to document the decision making process.

Home

The importance of clean data

06



The importance of clean data

Home

Background

Reliable and accurate data is the cornerstone of the valuation. This time, it's more important than ever. We understand the magnitude of the task of submitting and cleansing valuation data. With that in mind, we're pleased to announce a few innovations to help.

Why is clean data important?

Valuation results

It is important that results are accurate and provide appropriate information to help employers plan for the future. Any error in the valuation data will lead to an incorrect value being placed on an employer's assets and liabilities which ultimately feeds into its contribution rate. The valuation is a time to take stock and re-assess funding plans. However, that's not the full story.

The results also feed into other processes and calculations during the inter-valuation period such as:

- ◆ **FRS102/IAS19 reporting** – the valuation position is used to calculate the balance sheet;
- ◆ **Cessations** – in the absence of HEAT (our asset tracking system) the assets are rolled forward from the valuation position;
- ◆ **Bulk transfers** – if the transfer amount is calculated on a share of deficit approach, the employer's funding position is based on the valuation position; and
- ◆ **Risk management** – the analytics used to better understand, manage and mitigate the risks in your fund are heavily reliant on the data provided at the valuation.

An error in the formal valuation will be carried through these processes and beyond.

LGPS 2015 scheme

You will know all too well that with the introduction of CARE benefits, data recording is more important than ever. The CARE scheme relies upon accurate recording of data such as actual pay throughout the year as well as membership of the 50:50 scheme. Unpicking erroneous historic pay data could prove very difficult, time consuming and costly.

Regulatory and oversight bodies

Increased scrutiny from the Pensions Regulator (tPR) and the Scottish Scheme Advisory Board (SAB) means that clean data has taken on ever more significance.

For many years tPR has scrutinised the record keeping of pension schemes in the private sector. Now their attention has turned to public service pension schemes. tPR introduced a code of practice in April 2015, which has key requirements in relation to record-keeping that administering authorities have a duty to comply with.

The importance of clean data

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What data needs to be clean?

As part of the 2017 valuation we will require membership data extracts as at 31 March 2017, accounting data including details of contributions received and benefits paid, the employer database providing details about each employer in the fund, and membership data as at the date of joining for all new employers since 1 April 2014 (if not already provided).

How can we help you?

Following on from the introduction of LGPS 2015, we have been working on some exciting new innovative developments to help you with your data.

Universal Data Specification

Your team at Hymans Robertson has been working hard to agree a universal data specification with all the LGPS actuarial advisors, GAD and most importantly your administration software provider for all valuation and employer work. This new specification will make provision of CARE data an automatic process for you.

The Data Portal

Your new online tool to upload and automatically validate membership data in real-time went live in September 2015 for new employer work and is now ready for you to submit valuation data in the same way.

Validating data can be a time consuming and onerous part of the valuation. The Data Portal, like FocalPOINT, is available to you at no charge and will allow you to cleanse your data ahead of the 2017 valuation and on an ongoing basis after the 2017 valuation. This will allow you to investigate and correct data ahead of time, at a time most convenient to you.

Conclusion

The pressure on LGPS funds to ensure they hold clean data is greater than ever. The Data Portal is a useful tool that helps funds to liaise with all employers in the build up to the valuation and ensure employers' membership data is up to date and accurate. As always we are keen to help ensure your data is of the highest quality. If you wish to discuss data requirements further, please speak to your usual Hymans Robertson contact.

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Setting assumptions

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Setting assumptions

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Background

The triennial actuarial valuation begins with assessing the liabilities of the Fund by projecting the benefits that will be paid to members in the future. As there are uncertainties in both the timing and amount of payments to be made from the Fund over a long time horizon, we have to make assumptions about the future in order to place a value on the liabilities. Demographic assumptions impact the timing of payments and financial assumptions impact the amount of payments. The value placed on the liabilities is sensitive to these assumptions so the choice of assumption has to be reasoned and robust.

At Hymans Robertson, we undertake a comprehensive review of membership trends and experience in the LGPS, based on the data we hold across all our LGPS clients, input from Club VITA and other sources including national statistics to inform decisions about assumptions. Some assumptions are best informed by reference to national statistics or trends across the LGPS as a whole, whereas other assumptions are best determined with a stronger reliance on local knowledge.

This part of the valuation guide sets out the key valuation assumptions and the results of our national analysis. Individual Fund Actuaries will work with funds to determine the best assumptions for their Fund.

Setting assumptions

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Financial Assumptions

Pension Increases

Pension increases are inflation-linked with reference to the CPI index. Unlike RPI, there is not a market for CPI linked government bonds upon which to base an inflation assumption. Therefore, we derive the market-implied value of future RPI increases and adjust it to get an assumption for CPI. At the 2014 valuation the evidence suggested that the gap between RPI and CPI was 0.8%. The most recent data indicates that the gap between RPI and CPI is 1%. As at 31 March 2017, market implied RPI was 3.4% p.a. giving a recommended CPI assumption of 2.4% p.a.

Salary Increases

Historically, salary increases assumptions have had a long term focus but following the introduction of the new Scheme in 2015, only benefits accrued prior to 1 April 2015 retain a final salary link. This means that one of the key considerations is the assumed time for pre-15 liabilities to leave active status. Based on our analysis of a typical LGPS Fund, approximately half of these liabilities will no longer be active liabilities after a period of around 5 years. Therefore, the short-term outlook for salary increases, and in particular, government policy on public sector pay will be given increased weight at the 2017 valuation. Each Fund should also discuss with their actuary their view on longer term pay expectations. It is expected that the longer term assumption will fall in the range RPI to RPI plus 1.0%. We will weight and blend the short and longer term views and the outcome is likely to be a salary increase assumption of between 2.9%p.a. to 3.9%p.a, or RPI – 0.5% to RPI +0.5% as at 31 March 2017.

Setting assumptions

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Demographic Assumptions

The most significant demographic assumption is the longevity of LGPS members. This assumption is discussed in a separate note, "Longevity".

Salary Scale

We also consider the long term impact of promotions on the members' salaries. Analysis of relevant data indicates the continued existence of a promotional scale. For the 2017 valuations we have moved to a single salary scale applying to all members. This is consistent with the observed experience and allows for the continued narrowing of the gender pay gap as well as the discontinuance of marking LGPS employees as manual or officer. The scale has been developed to reflect the experience across our LGPS Funds.

Ill health

We continue to collate experience data on the new tiered ill health structure introduced in 2009. Following analysis of this data, in conjunction with data from ClubVita and ill health liability insurance claims, we have reduced our assumed incidence of ill health across both tiers 1 and 2. The effect of this will be a marginal reduction in liability and a slight reduction to the future service rate, although this is dependent on the profile of active members and will vary between employers.

Withdrawal rates

Following the introduction of the 2015 scheme, post-15 active liabilities are no longer linked to final salary, but are linked to CPI. This means a member's post-15 benefits are increased in the same way whether the member stays to retirement or leaves before retirement. The withdrawal assumption is therefore only impactful for pre-15 liabilities. In previous valuations our assumption has reflected the fact that members are more likely to leave within the first 2 years of service. At 31 March 2017 any active member with pre-15 liabilities has at least 2

years of service. We are therefore adopting a single assumption. Any change to liabilities or contribution rates will be marginal.

Pre-retirement mortality

The pre-retirement mortality experience analysis shows that the recommended 2014 assumption continues to be an accurate reflection of the actual experience. The assumption will therefore be unchanged from the previous valuation.

50/50 option

Evidence from funds suggests that the uptake of the 50/50 option has been significantly lower than assumed at the 2014 valuation. We note that there are a number of indicators for potential increased uptake of the option going forward including continued pay restraint and the end of contracting out, which affect members' take home pay, as well as increased awareness of the option. Given the above, and the variability of the data collated so far, this assumption should be set specifically for each fund, reflecting local experience and following discussion with the Fund Actuary.

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Background

Of all the demographic factors, longevity is the one that presents the greatest uncertainty to an LGPS fund. A quick look at the LGPS Longevity Index shows that life expectancy in the LGPS has been steadily increasing over the last 20 years. This has been reflected in the longevity assumptions adopted by actuaries at successive valuations, which have often led to an increase in the value of the past service liabilities and higher contribution rates payable by employers, as improvements outstripped expectations.

However, death experience in recent years has bucked the trend. There has generally been more deaths in recent years than was expected based on the 2014 valuation assumptions. How does this affect the 2017

Experience since 2014

Evidence from Club Vita tells us that there have been more deaths of LGPS pensioners than expected since 2014. This means that fewer pensions are in payment in 2017 than expected. This will, for a typical scheme, lead to a reduction in liabilities at the 2017 valuation of as much as 1%, although the actual effect will vary across different funds and employers depending on the actual experience of their members.

Cause and effect

Death experience at the population level was noticeably heavier in 2015 than in the previous decade. January 2015, in particular, saw over 10,000 more deaths in England and Wales than the average over the previous 5 years. This increase in deaths has widely been attributed to a relatively ineffective flu vaccine, although some commentators have recently suggested that changes in health and social care may be a contributing factor.

However, this heavier experience leads us to question whether this is the start of a new trend in longevity improvements, or simply fluctuations from one year to the next.

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Is this the start of a new trend?

If flu was indeed the principal driver of the 2015 experience that would suggest that it is less likely to be repeated in future years. If, however, changes to health and social care are driving the experience, we might expect the impact to be longer lasting.

Looking at the evidence from 2016 and early 2017, death rates, while lower than 2015, were nonetheless higher than expected based on the trend over the previous decade. This may strengthen the view that we have seen the beginnings of a new trend, although it is not quite conclusive.

A key question is the extent to which this apparent change in trend in population data is relevant to LGPS funds' membership. Indeed, recent analysis from Club Vita has shown that more affluent pensioners appear to have seen little downturn in the rate of increase of life expectancy. Given such members will typically represent a reasonable proportion of a fund's liabilities, we would be cautious about assuming future improvements will follow the same trajectory as the general population.

2017 valuation longevity assumption

The longevity assumption set by the actuary at the valuation can be split into two separate parts:

- ◆ Baseline longevity - how long we expect members to live based on current death rates; and
- ◆ Future improvements in longevity - how death rates are expected to change in the future.

Baseline longevity

The baseline longevity assumption for all Hymans Robertson advised LGPS funds will be set using information from Club Vita. For funds subscribing to the full Club Vita service, the baseline assumptions will be a bespoke set of VitaCurves that are applied to each member depending on socioeconomic factors. For all other funds, a fund level specific tailored assumption will be created based on the fund's membership and experience.

Evidence has shown over the years that this assumption closely reflects the actual experience of LGPS funds, meaning that there are rarely any surprises in terms of the financial effect of baseline mortality. However, the effect of the 2015 experience will be allowed for in the 2017 valuation baseline longevity assumptions.

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Future improvements

Against the backdrop of continuing rises in life expectancy, our 2014 assumption for future longevity improvements was based on a 'wait and see' approach. As such, we based our assumption on the 2012 version of the Continuous Mortality Investigation (CMI) longevity improvements model, which is published by the Actuarial Profession, and allowed only for data up to 2011, rather than the heavier experience of more recent years, when setting initial rates of improvement. We assumed that these improvements would immediately start to tail off to a long term rate of 1.25% p.a.

Our recommended assumption for the 2017 valuation will be based on the 2016 version of CMI longevity improvements model. This model is built using population data up to 2016 to estimate current rates of improvement. As such moving to the latest model will reflect recent heavy experience, which will typically reduce liabilities.

This latest version of the model also allows users to easily adjust the level of smoothing applied to experience over time. As there remains some uncertainty around whether there is sufficient evidence to conclude that recent mortality experience is the start of a new trend, and the extent to which any such change in trend at the population level would be relevant for the members of the funds, we will increase the level of smoothing to reduce the impact of the last few years (which will, in isolation, increase liabilities).

Our view of the longer term is unchanged, therefore we will retain the assumption for the long term rate of improvements of 1.25% p.a. (living around 1 month longer per year). In addition we will assume that this long term rate will tail off above age 90, down to 0% at age 120, in line with the assumption at the previous valuation.

Overall we would describe these assumptions as reflecting recent longevity experience whilst retaining a 'wait and see' approach on the future (as we continue to monitor how longevity experience evolves over time) in order to avoid understating the likely rates of improvement.

We would anticipate that overall these changes to longevity assumptions would typically result in modest reductions in liabilities.

If you wish to discuss the content of this guide further, please speak to your usual Hymans Robertson contact.

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