

THE PENSIONS TRUST – SCOTTISH HOUSING ASSOCIATIONS' PENSION SCHEME (SHAPS)

Discussion of FRS 102 assumptions

MONTH ENDS FROM
31 MARCH 2023
TO
29 FEBRUARY 2024

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Purpose and Background

Purpose and scope

We have prepared this report for TPT Retirement Solutions Limited (“TPT”).

This report has been commissioned by TPT. The sole purpose of this report is to provide TPT with a recommended approach to deriving key assumptions when preparing accounting disclosures under Section 28 of FRS 102 for employers participating in the Scottish Housing Associations’ Pension Scheme (“SHAPS”).

This report sets out a proposed approach for setting the assumptions for month ends between 31 March 2023 and 29 February 2024 (“2023/24 month ends”).

The views expressed in this report are based on our latest opinions and experience of the wider practice of setting FRS 102 assumptions. This report does not contain any recommendations made specifically for any particular participating employer(s). As such, we have not taken into account any employer-specific information that we may otherwise have considered if recommending an approach to deriving assumptions on an individual employer basis. The contents of this report should not be taken as advice to individual employers as to what assumptions they should ultimately adopt, rather as generic (non-employer specific) recommendations to TPT as to what approach should be taken for setting “default” assumptions. Our understanding is that TPT’s online accounting tool gives individual employers flexibility to adjust assumptions where they wish to do so.

Decisions required

In accordance with FRS 102, each employer will need to decide on the assumptions to be used for the preparation of their year-end disclosures, and ensure that their auditor is comfortable with the approach adopted. If you would like to discuss anything included in this report further then please let us know.

Impact of decisions

The assumptions at the year-end will affect the year-end balance sheet position and the following year’s P&L cost. The decisions made do not typically affect the current year’s P&L cost. Auditors are likely to focus on whether any approach at the year-end is a disclosable change in accounting principles.

Accounting standards

The accounting standards set out the underlying principles for the actuarial assumptions (e.g. assumptions should be based on a 'best estimate' of future experience), and clear direction on the basis for the discount rate. The assumptions also need to reflect market conditions as at the reporting date.

Reasonable range for assumptions

For each of the assumptions discussed in this paper, there is a range of acceptable decisions an employer could make, supported by different methods and approaches. Different assumptions within this reasonable range can have a material impact on the year-end position. The approach chosen may depend on an employer's objectives and where it wishes to position itself relative to other companies. This approach may also differ depending upon the characteristics of each employer's benefit obligations and the materiality of the disclosures to the overall accounts. We would be happy to discuss alternative assumptions and the rationale supporting them if TPT would like to explore such options, or provide advice to individual employers if required.

Relevance of funding assumptions

The selection of the assumptions to be used for accounting purposes is largely independent of the assumptions used for funding purposes. However, many of the same principles and data will be applicable to both the funding and accounting valuations, particularly in relation to the demographic assumptions.

Impact of climate change

In line with the thematic review carried out by the FRC (Financial Reporting Council), employers may wish to consider the risk and impact of climate change in relation to their pension disclosures.

In terms of assumption setting, as the economic assumptions are set on a market related basis consistent with the principles of the accounting standards, they allow implicitly for climate change to the extent that the market allows for it.

The impact of climate change on demographic assumptions would primarily be expected to impact the mortality assumptions - particularly future mortality improvements. What that impact would be is sufficiently uncertain not to materially change our current view on long term mortality improvements, and overall we do not consider climate change to be any more material than many of the other uncertainties linked to future mortality expectations. This should be kept under review, along with other factors that affect longevity risk.

Significant events

This report does not consider any adjustments or alternative assumptions that may be required following a special event (e.g. a settlement or curtailment).



Miles Woodhouse FIA

Mercer Limited

24 April 2023

Important Notes

Compliance with technical actuarial standards

This paper, and the work done in its preparation, is covered by and compliant with Technical Actuarial Standard 100 (TAS 100) which is issued by the Financial Reporting Council.

Confidentiality, scope and third parties

This paper is provided under the terms of the Project Agreement between TPT and Mercer dated 19 December 2022.

Mercer is providing this advice in its capacity as an adviser to TPT, not as an adviser to individual employers. TPT is ultimately responsible for the assumptions it uses when producing accounting disclosures and individual employers are ultimately responsible for selecting the accounting policies, methods and assumptions they wish to apply. Individual employers are responsible for obtaining formal confirmation from their auditors that their accounting policies are compliant with all necessary accounting standards.

The advice in this report has been supplied by Mercer on the following basis:

Unless otherwise stated, we have relied on the information and data TPT Retirement Solutions Limited have supplied to us in preparing the report and information from other third party sources, without independent verification. Save for where such third party is connected to, associated with or an affiliate of Mercer, we will not be responsible for any inaccuracy in the advice that is a direct result of any incorrect information provided to us. As such, Mercer (i) makes no representations or warranties as to the accuracy of the information presented by you or any third party and ii) takes no responsibility or liability (including for indirect, consequential or incidental damages), for any error, omission or

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Unless agreed otherwise, no additional work will be performed after the date of this report nor will it be updated to take account of any events or circumstances arising hereafter.

Unless agreed otherwise in writing or as set out earlier, we do not accept any liability or responsibility to any third party in respect of this report.

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Summary of proposed assumptions

The following tables set out the proposed assumptions to use for the 2023/24 month ends, alongside the approach adopted for month ends between 31 March 2022 and 28 February 2023 (“2022/23 month ends”) for comparison.

The benefit obligations for different participating employers in SHAPS will have different durations, and the financial assumptions used for each employer should appropriately reflect this.

Derivation of principal financial assumptions

	2022/23 approach	Proposed 2023/24 approach	
Discount rate:	Single equivalent discount rate derived using the UK Mercer Yield Curve for AA corporate bond yields and sample cashflows with appropriate duration.	Single equivalent discount rate derived using the UK Mercer Yield Curve for AA corporate bond yields and sample cashflows with appropriate duration.	No change in derivation.
Retail Price Inflation (RPI):	Single equivalent rate derived using UK Mercer implied inflation curve less an inflation risk premium of 0.3% p.a.	Single equivalent rate derived using UK Mercer implied inflation curve less an inflation risk premium of 0.3% p.a.	No change in derivation.
Consumer Price Inflation (CPI):	Derived from the RPI assumption above, less a single equivalent “gap” for the expected average difference between RPI and CPI over the long term, derived assuming an RPI/CPI gap of 1.0% p.a. before 2030 and 0% p.a. from 2030.	Derived from the RPI assumption above, less a single equivalent “gap” for the expected average difference between RPI and CPI over the long term, derived assuming an RPI/CPI gap of 1.0% p.a. before 2030 and 0% p.a. from 2030.	No change in derivation.
Earnings growth:	CPI plus 1.0% p.a.	CPI plus 1.0% p.a.	No change in derivation.

Derivation of principal demographic assumptions

	2022/23 approach	Proposed 2023/24 approach	
Mortality: Base table	Pre-retirement: No allowance Post-retirement: 104% of S2PxA	Pre-retirement: No allowance Post-retirement: 122% of S3PxA	Assumption updated in line with 30 September 2021 scheme funding valuation, with allowance for prudence removed.
Mortality: Future improvements	CMI_2021 [S=7.0; 1.25%, A=0.25%, w ₂₀ =0, w ₂₁ =0] for males CMI_2021 [S=7.0; 1.25%, A=0.5%, w ₂₀ =0, w ₂₁ =0] for females	CMI_2021 [S=7; 1.25%, A=0.25%, w ₂₀ =0, w ₂₁ =10%] for males CMI_2021 [S=7; 1.25%, A=0.25%, w ₂₀ =0, w ₂₁ =10%] for females	The w ₂₀ and w ₂₁ and A parameters are based on recent analysis carried out for TPT Retirement Solutions Limited.
Commutation:	75% of members take the maximum cash at retirement using Trustees notional cash commutation rates for triennial valuations as in force at 31 December 2021.	75% of members take the maximum cash at retirement using Trustees notional cash commutation rates for triennial valuations as in force at 31 December 2022, to be updated if more recent analysis is available	No change in derivation.
Retirement:	As per the most recent Technical Provisions assumptions for past service liabilities. For cost of future service, members over the assumed retirement age at the valuation date will be assumed to retire in 1 year's time.	As per the most recent Technical Provisions assumptions, with the addition that all members over the assumed retirement age at the valuation date will be assumed to retire in 1 year's time for both past service liabilities and future service.	This is a minor change to retirement assumption to ensure all members over retirement age are still included in accrual costs and simplify calculation approach. We do not expect this to change past service liabilities materially.
Other demographic assumptions:	As per the most recent Technical Provisions assumptions.	As per the most recent Technical Provisions assumptions.	No change.

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Discount Rate

Deriving a discount rate

The discount rate is the rate of interest used to discount retirement benefit obligations. The accounting standard requires the discount rate to be determined by the yields on high quality corporate bonds at the measurement date. For this purpose, a high quality corporate bond is taken as a bond that has been rated at the level of AA or equivalent status. The currency and term of the corporate bonds should be consistent with the currency and estimated term of retirement benefit liabilities.

Since payments are made over many years into the future, in theory AA corporate bond spot rates are needed for all terms at which payments may be due. The assumed discount rate is then the single discount rate equivalent to discounting these liability payments, or cashflows, at the term-dependent spot rates. In practice, more pragmatic methods are often used.

Judgement is required when deriving the yield curve or discount rate, mainly in respect to the bond universe selected, the approach to fitting the yield curve and the approach to extrapolating the yield curve at long durations once there ceases to be a deep market in corporate bonds.

In the UK, the most common extrapolation approach looks at government bonds (gilts). Where gilts and corporate bonds have similar payment terms, there is strong evidence that their yields are correlated. The UK Mercer Yield Curve uses gilt curve extrapolation, but alternative extrapolation approaches are possible. Please let us know if you would like to discuss alternative approaches.

Recommendation

We propose using single discount rates which, when used to discount the projected benefit cashflows underlying a pension scheme with durations relevant to each employer, would give broadly the same result as using a full AA corporate bond yield curve to discount the same cashflows. This approach will therefore result in different single discount rates being derived for different employers, dependent on the duration of the relevant benefit obligations.

The yield curve used to derive the discount rates for 2022/23 month ends was based on the Mercer Yield Curve model, which includes information from all corporate bonds with an AA rating that met our criteria for inclusion. We believe this remains suitable for use for the 2023/24 month ends. Further details of the bond universe used and the construction of the Mercer Yield Curve can be provided if required.

The following table provides single equivalent discount rates by duration, derived using the recommended approach at various dates:

Duration	2022/23 approach	Proposed 2023/24 approach	
	As at 31.3.22	As at 30.9.22	As at 31.3.23
6 years	2.65% p.a.	6.04% p.a.	4.95%
10 years	2.74% p.a.	5.71% p.a.	4.91%
14 years	2.78% p.a.	5.46% p.a.	4.88%
18 years	2.79% p.a.	5.27% p.a.	4.84%
22 years	2.79% p.a.	5.09% p.a.	4.82%
26 years	2.77% p.a.	4.93% p.a.	4.77%
30 years	2.76% p.a.	4.80% p.a.	4.72%

Market indicator

Although we are not proposing to use the iBoxx £AA Corporates (over 15 years) index, it is a good indicator of how corporate bond yields have changed over the last 12 months (as shown in the graph below for the 12 months to 31 March 2023).



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Price Inflation

Deriving an inflation assumption

The headline assumption for price inflation is important as it is used to set a number of other inflation-linked assumptions. Examples include assumptions for inflation-linked pension increases in payment and pension increases in deferment for early leavers. It is also typically used as the basis for setting the assumption for earnings increases.

Retail Prices Index (RPI) Inflation

The RPI inflation rate has historically been based on the gilt implied inflation yield curve, reflecting the duration of a pension scheme's cashflows, in a consistent way to the discount rate. The gilt implied inflation yield curve is derived based on the market implied yields available from fixed-interest and index-linked Government bonds ('gilts') and represents the rate of RPI in the future that would give investors the same total return from these stocks. This 'market implied' rate is the starting point for the future RPI assumption.

This approach results in a risk that the 'market implied' rate is different from actual expectations for future inflation. In particular, the market implied rate may be overstated because some investors are prepared to pay a premium to hedge their inflation risk, and due to the excess demand and short supply of inflation protection in the gilt market, artificially increasing the market's perceived expectation of future inflation. The difference between market implied inflation expectations and actual (expected) inflation is known as an inflation risk premium.

Following a consultation process, the UK Government announced in November 2020 that the calculation of the RPI would be amended to match the Consumer Price Index including Housing (CPIH) from 2030.

CPIH is essentially the same as CPI but with an allowance for owner occupied housing. In the past, on average over the long term, CPIH has been almost the same as CPI inflation, and is expected to be materially lower than RPI.

Mercer view

We believe that RPI reform was largely priced in to the gilt-implied inflation curve at the time that the outcome of the Government consultation was announced in November 2020, which is supported by the very limited gilt market reaction to the consultation outcome.

However, there remains uncertainty over the extent to which supply/demand imbalances are distorting the longer end of the gilt implied inflation curve and therefore may require an adjustment to determine a best estimate of RPI.

Inflation risk premium

There is no objective method of determining the correct level of the future inflation risk premium adjustment (if indeed there is any), particularly when gilt yields are distorted. Before consideration of the RPI reform proposals, adjustments of up to 0.3% p.a. to the rate of future RPI implied by the gilt market are supported by academic research and research published by the Bank of England, and so may be considered reasonable. In theory, an inflation risk premium adjustment should vary by term and there is generally likely to be more inflation uncertainty at longer durations.

At the end of 2020, commentary from the UK Debt Management Office and LDI investment managers suggested that the supply/demand imbalance of inflation protection at terms after 2030 may be causing a greater inflation risk premium at longer durations than historic norms. In our view, this has persisted in 2021/22 along with greater fear of inflation risk arguably contributing to more demand for inflation hedging protection and causing a greater inflation risk premium. The following new evidence can be considered:

- The Bank of England's February 2022 Monetary Policy Report notes that market-implied RPI has risen above its medium term average in the UK, in contrast to the US and euro area where measures are similar to past averages. The report notes that the use of UK inflation markets for hedging large pension liabilities can at times cause these to move even in the absence of changes in inflation expectations, although market intelligence suggests recent moves in part reflect higher central expectations for inflation. The Monetary Policy Committee concludes that UK inflation expectations remain well anchored, suggesting that higher market implied RPI may be influenced by a higher inflation risk premium.
- The Bank of England's August 2022 Monetary Policy Report notes that medium term inflation expectations have fallen but they, and household indicators, remain above historical averages. However it should be noted this was published before the changes in Government policy on energy prices, announced in September 2022.
- The Government Actuary's Department commented in a report in September 2021 that an inflation risk premium of 0.25% to 0.5% pa would seem reasonable given the uncertainty of the impact of the announcement of the changes to RPI and the uncertainty over future price inflation as we emerge from the COVID-19 pandemic.

Recommendation

For 2022/23 month ends, we recommended using an inflation risk premium adjustment of 0.3% p.a. The size of the inflation risk premium is a matter of judgement and it is common in financial reporting to use a constant inflation risk premium adjustment rather than to use a model to estimate changes in the inflation risk premium over time. This is because any such model would require subjective

judgements on the long term outlook for RPI inflation and the likelihood of the Bank of England inflation target being met. On balance, we suggest maintaining the approach followed for 2022/23 month ends by adjusting the gilt market-implied RPI rate for 2023/24 month ends by an inflation risk premium of 0.3% p.a.

As with the discount rate, setting RPI inflation assumptions based on the duration on the relevant benefit obligations will result in different RPI assumptions being derived for different employers.

The following table provides sample single equivalent RPI inflation rates by duration, allowing for the 0.3% p.a. inflation risk premium recommended for 2022/23 and 2023/24 month ends:

Duration	2021/22 approach		Proposed 2022/23 approach	
	As at 31.3.22	As at 30.9.22	As at 31.3.23	
6 years	4.41% p.a.	3.91% p.a.	3.11%	
10 years	4.00% p.a.	3.78% p.a.	3.21%	
14 years	3.77% p.a.	3.69% p.a.	3.20%	
18 years	3.62% p.a.	3.61% p.a.	3.17%	
22 years	3.51% p.a.	3.53% p.a.	3.15%	
26 years	3.42% p.a.	3.45% p.a.	3.11%	
30 years	3.35% p.a.	3.39% p.a.	3.08%	

Adjustment for recent inflation

The gilt implied inflation curve reflects future inflation expectations from the current point in time. However, because revaluation and pension increases are calculated based on inflation at specific month-ends, forthcoming revaluation and pension increases are also affected by recent inflation. We propose this be allowed for as an experience adjustment within TPT's online accounting tool by reflecting known changes in inflation since the last reference month used for pension revaluation and pension increases.

Consumer Prices Index (CPI) Inflation

The RPI/CPI gap

Historically, there has been no reliable indicator for market expectations of CPI inflation. Hence, the assumption for CPI has commonly been derived by making an adjustment for the expected long term gap between RPI and CPI. This has generally been viewed as more credible than fixing the assumption based on the Bank of England CPI inflation target. This may change going forward, especially from 2030, when RPI is moved to CPIH.

Historically the rate of change in RPI has been higher than CPI, on average. The difference results from the fact that the two indices are calculated in a slightly different way (the 'formula effect') and that the constituents of the indices are not the same.

Evidence as to the size of the gap (before any allowance for the RPI reform) includes:

- Analysis published by the UK's Office for National Statistics suggests that over the long term the 'formula effect' is the most significant cause of differences, and that the 'formula effect' is around 0.9% per annum.
- The Bank of England has noted 'discussions with market participants suggest that the long-run wedge priced into inflation breakevens is around 0.9% to 1% on average.
- The Government Actuary's Department suggest in a September 2021 report a gap between RPI and CPI of 1% p.a. before 2030
- Recent accounting assumption survey data suggests that the most common assumed gap between RPI and CPI has been 1% p.a., before allowance for RPI reform.
- The Office for Budget Responsibility's (OBR) Economic and Fiscal Outlook reports have historically cited an estimated long run RPI/CPI gap of 1.0% p.a., although this reduced to 0.9% p.a. in December 2019. The November 2022 version of this report forecast a 1.2% p.a. RPI/CPI gap over the next 5 years
- Inflation figures published in 2022 show an RPI/CPI wedge of 2% or more in recent months up to November 2022. An argument could be made that the average RPI/CPI wedge pre-2030 has increased due to the greater short term forecasts for the RPI/CPI wedge but there remains significant uncertainty.

From 2030, when RPI will be aligned with CPIH, the CPI assumption can be derived by considering the long term gap between CPIH and CPI. The main difference between CPIH and CPI is the allowance made in CPIH for owner occupied housing, along with some differences in the weights given to different categories of goods within the inflation indices. Over long periods of time and economic cycles, the difference is expected to be at or close to zero.

In December 2021, the High Court granted permission for a judicial review of the decision to align the calculation of RPI with CPIH from 2030. The review has now taken place; in September 2022 the High Court rejected all three challenges raised and confirmed that the changes can be made. This result was in line with expectations and markets did not move significantly as a result.

Recommendation

We recommend single average RPI/CPI gaps based on a 1.0% p.a. assumed gap before 2030 and a 0% p.a. gap thereafter, suitably weighted to reflect each employer's exposure to CPI liabilities.

The following table provides single equivalent CPI inflation rates at various dates, derived by duration.

Duration	2022/23 approach		Proposed 2023/24 approach	
	As at 31.3.22	As at 30.9.22	As at 31.3.23	
6 years	3.59% p.a.	3.12% p.a.	2.32%	
10 years	3.39% p.a.	3.21% p.a.	2.64%	
14 years	3.28% p.a.	3.23% p.a.	2.74%	
18 years	3.21% p.a.	3.23% p.a.	2.79%	
22 years	3.16% p.a.	3.21% p.a.	2.83%	
26 years	3.12% p.a.	3.17% p.a.	2.83%	
30 years	3.09% p.a.	3.14% p.a.	2.83%	

As stated above, we recommend that CPI inflation rates are calculated using a single equivalent RPI/CPI gap derived by applying a suitable weighting to pre and post 2030 gaps to reflect each employer's exposure to CPI liabilities. Whilst the example rates above are based on weighting the recommended pre and post 2030 RPI/CPI gaps by duration, the appropriateness of this approach may vary for each employer. We would be happy to discuss this point further if required. TPT's online accounting tool will allow employers to vary this assumption, where necessary, to best suit their particular exposure to CPI inflation.

Market indicator

The following graph is a 12-month plot of the RPI inflation rate implied by the market up to 31 March 2023. The rates shown are 15-year projections published by the Bank of England (i.e. the market's expected average rate of RPI inflation that will be experienced over the next 15 years).



5

Earnings Growth

Deriving a real earnings growth assumption

The earnings growth assumption is generally set by reference to price inflation as, over the long term, there is evidence that general pay growth keeps up with increases in the cost of living. It is therefore common to set an assumption for earnings increases relative to the price inflation assumption (this is known as “real earnings growth”). Real earnings growth could be considered by reference to RPI or CPI inflation.

Real earnings growth is expected to be positive over the long term as it must take into account not only inflationary increases, but also promotional increases.

The Government Actuary's Department noted in a September 2021 report that its best estimate of future national average earnings growth is CPI inflation plus 1% to 1.25% p.a.

Significant variation is possible in earnings growth depending on industry sector specific factors and the extent of promotional increases.

Recommendation

We propose that the “default” earnings growth assumption is set at 1.0% p.a. above CPI inflation. This is a central assumption that aims to broadly reflect long-term earnings growth expectations for SHAPS as a whole. TPT's online accounting tool will allow employers to vary this assumption to best suit the particular profile of their own workforce.

This methodology is consistent with that adopted in previous years.

6

Pension Increases

Inflation-related pension indexation

Deriving deferred revaluation assumptions

Assumptions are required for pension indexation before retirement that are based on RPI or CPI inflation, subject to a minimum or maximum level of annual increase measured over the whole period of deferment. Where the increase is linked to inflation, an assumption is set by taking the relevant inflation assumption and applying the caps and collars directly to this.

We recommend that the assumption for revaluation of deferred pensions is set equal to the relevant inflation assumption, subject to the maximum annual cap. This is consistent with prior years.

Deriving pension increase assumptions

Assumptions are required for pension indexation after retirement that are based on inflation and are subject to minimum and maximum amounts. Generally, for pension increases in payment the level of inflation is compared to the cap and / or collar in each individual year. To allow for this the assumption is typically set by considering the likelihood of inflation being above the cap or below the collar in future years, and applying an adjustment to the relevant inflation assumption to reflect this.

We propose allowing for the impact of caps and floors using a Black Scholes model with assumed annual volatility of 1.75% p.a. Note that although we have experienced recent short term inflation volatility we are comfortable that a 1.75% p.a. volatility parameter remains a suitable long term assumption.

CARE revaluation assumptions will be derived using a similar approach to that adopted to derive the pension increase assumptions

This is consistent with the approach taken in prior years.

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Mortality

The mortality assumption

The mortality assumption can be broken down into two distinct parts:

- A 'baseline' assumption about current mortality rates that takes into account the profile of the membership.
- A 'future improvement' assumption about how these 'baseline' rates should be projected into the future.

Recommended approach for the baseline mortality assumption

The Trustee commissions a regular analysis of the membership profile for SHAPS using Club Vita. The characteristics (for example affluence, postcode and health at retirement) of the individual members are used to identify the best estimate mortality rates applicable to each member of the scheme. For 2022/23 month ends, a 104% loading was applied to the standard S2 "SAPS" tables to give broadly the same results as applying "vita curves" to individual members.

The results of the 30 September 2021 Scheme Funding Valuation for SHAPS showed a 122% loading to the standard S3 "SAPS" tables would give broadly the same results as applying "vita curves" to individual members (based on the latest Club Vita analysis), with a 101% scaling factor, reflecting the Trustee analysis of recent mortality experience. Therefore, for the purpose of the 2023/24 month ends, we recommend the base tables are updated to reflect the assumption used for the latest scheme funding valuation (116% of S3 tables with the 95% scaling factor as a margin for prudence removed).

Mortality rates before members retire are not expected to have a material impact on the defined benefit obligation. We therefore propose that it is assumed all members will survive to their retirement dates.

Future mortality improvements

The Continuous Mortality Investigation (CMI) model for projecting future improvements is updated each year to build in its latest analysis of mortality rates over the previous year. This includes both a re-estimation of observed past improvements and a new projection of future improvements.

The most recent version of the model, CMI_2021, was published in March 2022. In response to the COVID-19 pandemic which caused exceptional mortality experience in 2020 and 2021, the CMI 2021 model includes further flexibility allowing users to place more weight on mortality data for individual

years in forming the projections. The default parameter is to place no weight on the 2020 or 2021 data, and full weight on all other years, essentially setting aside 2020 and 2021 experience. Therefore, all other things being equal, updating to the 2021 model using the default approach, would only expect to result in a small reduction to the life expectancies compared to the 2020 model.

The overall impact of updating to the CMI_2021 model however will depend on the parameters chosen, which requires judgement in respect of:

- the degree of responsiveness to each new year of data determined by the period smoothing parameter (s-kappa), with s-kappa of 7 and 7.5 most commonly being used for accounting purposes. An s-kappa of 7.5 gives less weight to recent mortality experience than 7, which will tend to make the mortality assumption less volatile from year to year;
- the long term improvement rate (i.e. the rate of mortality improvement likely to be experienced at each age, in about 20 years' time, tapering to zero improvement between ages 85 and 110), with a rate of 1.25% or 1.5% most commonly being used for accounting purposes; and
- the optional "initial addition" parameter to allow the short term mortality improvement rates to be calibrated to reflect a plan's membership profile.
- the amount of weighting applied to individual years, including particularly the amount of weight attributed to 2020 or 2021.

For 2022/23 month ends an s-kappa of 7 was used. Given the continued widespread use of an s-kappa of 7 within accounting disclosures and consistent with its use for the 30 September 2021 Scheme Funding Valuation for SHAPS we believe that it would be reasonable to continue using an s-kappa of 7 for 2023/24 month ends so as to give more weight to each year of new data. Although this would lead to slightly lower liabilities currently, it is likely to lead to more volatility in the mortality assumption from year to year. If strong mortality improvement rates were observed in future years, then an s-kappa of 7 could lead to higher liabilities than an s-kappa of 7.5.

The CMI model is based on general population data for England & Wales. There is evidence published by the Office for National Statistics that individuals in higher socio-economic groups, have been better mortality improvements in recent history. The Trustee commissions Club Vita to provide analysis on longevity trends across TPT membership, which indicates higher annualised mortality improvement for its membership than the core CMI model. We understand the Scheme Actuary latest best estimate view considering latest analysis for TPT recommends an initial additional parameter of 0.25% for males and females. Therefore, to better reflect the profile of the general TPT membership and for consistency with Trustees best estimate, we recommend using an initial addition parameter of 0.25%.

The long term improvement rate is more uncertain and there is no core parameter. Lifestyle improvements and medical advances could lead to a significant increase in future mortality improvements, at least in the long term. Recent mortality trends are not a reliable predictor of trends

20 years from now, which may be more influenced by long term economic growth and healthcare. We remain comfortable with the previous year's assumption for the long term improvement rate of 1.25% p.a.

As stated above, in response to the COVID-19 pandemic which caused exceptional mortality experience in 2020 and 2021, the CMI 2021 model introduced further flexibility allowing users to place more weight on mortality data for individual years in forming the projections. The default parameter is to place no weight on the 2020 or 2021 data, and full weight on all other years, essentially setting aside the 2020 and 2021 experience.

The short term mortality evidence published by the CMI in 2022, up to September 2022, is showing about 2% more deaths compared with pre-pandemic levels in 2019. This may reflect short term indirect implications of COVID-19, however there remains considerable uncertainty and there is no compelling evidence to support a long term impact of the pandemic on mortality. It is possible to justify an assumption for a short to medium term adverse mortality impact due mainly to delayed medical interventions following the pandemic. There is also further evidence emerging from the 2021 census data and the CMI is reviewing its model approach as part of the preparation of CMI_2022.

In light of the COVID-19 and mortality analysis carried out for TPT (dated July 2022) we believe it is reasonable to use a weighting of 10% to 2021 data within the CMI 2021 model.

It is expected that CMI 2022 will be released in June 2023 and we are aware that the CMI is reviewing its model approach as part of the preparation of CMI 2022. We therefore recommend that the CMI 2021 model is retained for the 2023/24 month ends but with updated weighting of 10% to 2021 data to reflect the latest Trustee analysis TPT has received. An update to the CMI 2022 model (and any associated parameters) will be considered for 2024/25 month ends.

Recommendation

We recommend updating the base mortality assumptions used for 2022/23 month ends as discussed above, in line with the 30 September 2021 Scheme Funding Valuation with the margin for prudence removed.

We recommend continuing to use the CMI_2021 model using a smoothing parameter of 7 and no weighting allowance being made for 2020 data but reducing the initiation addition parameter to 0.25% for females and allowing for 10% weighting for 2021 data consistent with the latest analysis received by TPT.

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Other Assumptions

Commutation

Deriving a commutation assumption

A high proportion of pension scheme members typically take the maximum available cash lump sum at retirement. A best estimate assumption would normally be set by examining the take up from recent retirements.

The assumption used for the 2022/23 month ends - that 75% of members take the maximum cash available to them – was based on a study commissioned by the Trustee in October 2015 into the take up rate of cash commutation at retirement and our understanding is that the latest available analysis also supports the continued use of this assumption.

If new commutation factors are expected to be adopted in the short term, it is likely to be appropriate to use those new factors when calculating the liabilities. There may be some uncertainty over the timing for new factors being introduced and over the longer term, future changes to commutation factors are uncertain as, for example, expected increases due to life expectancy improvements could be offset by expected rises in interest rates as seen recently. Consistent with the 2022/23 months cash at retirement will be assumed to be exchanged based on Trustees notional cash commutation rates.

Recommendation

We propose that the factor used for 2022/23 month ends – that 75% of members take the maximum cash available at retirement using Trustees notional commutation factors for triennial valuations as in force at 31 December 2022. If a more recent study has been undertaken into the take up rate of pension commuted at retirement, and this study suggests a different assumption may be more appropriate, we recommend that the assumption be updated to reflect the latest study.

GMP Equalisation

A High Court ruling on 26 October 2018 clarified that an obligation exists to adjust benefits for the effect of inequalities caused by GMP earned between 17 May 1990 and 5 April 1997 (where applicable). A subsequent ruling on 20 November 2020 confirmed trustees also have an obligation to revisit and equalise statutory transfer value payments paid between 17 May 1990 and 26 October 2020 to address GMP inequalities (where applicable). The impact of these rulings will vary from

employer to employer and we recommend companies discuss with their auditors how to allow for this in their accounting disclosures. Please let me know if you would like to discuss this further.

Other assumptions

We propose that no allowance is made for the award of any discretionary benefits.

All other assumptions are proposed to be consistent with those used for the most recently completed triennial actuarial valuation, with the exception of the retirement assumption for members over retirement age at the date of the valuation. For such members we recommend that these members are assumed to retire in 1 year from the valuation date for the purposes of valuing both the past service liabilities and the future service cost. This is not expected to have a material impact on the results but we recommend the adoption of this assumption for calculation simplicity.

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