

# Zombie pension schemes: a viable alternative?

Will it become more common for DB schemes to run off without sponsor support? We look at how to assess the viability and trade-offs of operating under such arrangements and how investment strategy could be set.



John Southall is Head of Solutions Research. His responsibilities include financial modelling, investment strategy development and thought leadership.



Peter Knight is a Senior Solutions Strategy Manager. He focuses on the management of the Solutions Group's range of objective-driven pooled funds and on bespoke fund management solutions on behalf of LGIM's internal and external client base.

Could zombies soon be shuffling inexorably out of the world of popular culture, and into that of defined benefit (DB) pension regulation?

There is a chance that this will indeed be the case – figuratively, at least – if more pension schemes follow their peers at Kodak, BHS and Trafalgar House in becoming independent entities, being run without sponsor support.

Some actuaries have argued<sup>1</sup> that such deals set a potentially dangerous precedent for struggling employers. But another perspective is that this is potentially a good thing and more attractive than the Pension Protection Fund (PPF) cutting pensions and the prospect of possible job losses.

Such 'zombie' schemes can target benefits that are (normally) lower than would have been provided by

their old scheme, but higher than if they were to wind up and crystallise a shortfall. They are essentially run on a 'best endeavour' basis, rather than a legally binding promise, with members taking on some risk.

As yet, these schemes are something of a rarity on the pensions landscape, and considered to only be suitable for a select few companies. But, given that the government is deliberating on whether to make it easier for this approach to be taken<sup>2</sup>, they could become more common in the event that more sponsors fall into financial difficulties.

In this paper, we consider a framework to help decide when – should it become an option – running as a zombie could make sense, how investment strategy could be set and the ultimate chance of such schemes succeeding in their objectives.

1. <https://www.ftadviser.com/pensions/2017/03/01/fears-bhs-pension-deal-heralds-era-of-zombie-schemes/>

2. In March this year the DWP published a White Paper "Protecting Defined Benefit Pension Schemes". The headline proposals involved greater powers for the Regulator and a consultation on approaches to consolidation. However, the paper also made some interesting comments concerning Regulated Apportionment Arrangements (RAAs) – the arrangements that allow a financially troubled employer to detach itself from its DB liabilities. They said they are "committed to working closely with the Regulator, PPF, stakeholders and the pensions industry to look at whether it is possible, without increasing risk to scheme members, to make improvements to the RAA process, thereby increasing the potential for positive outcomes for businesses which might otherwise fail". This is following over half of respondents to the 2017 Green paper (on the security and sustainability of DB schemes) suggesting that the existing process is too complex.

## RISK AND REWARD

Choosing to run a scheme under a zombie structure presents a trade-off for members and trustees. The new scheme would have the potential to pay all of the benefits targeted, while current workers may get to keep their jobs if the restructuring involved prevents the company from becoming insolvent. But there is also a risk that experience is poor and the scheme falls into the PPF, meaning members would have been better off overall if the scheme had wound-up to start with.

A case-by-case analysis of schemes, against a suitable framework, is needed to understand these trade-offs. For example, a very 'young' scheme consisting of deferred members could have a high chance of achieving a better outcome over the long term than if it were to immediately wind-up. This may be the case even if it were invested purely in liability-driven investment (LDI) strategies, due to the higher cost of deferred-annuity pricing, which becomes lower over time as longevity risk reduces. For other schemes, particularly small ones, the fixed costs (such as actuarial) may be too high to justify.

Another potential issue is that the zombie structure allows current pensioners to receive full benefits at the potential detriment of deferred members, raising questions over the intergenerational impact.

Interaction with the PPF also needs to be considered: as a safety net for all schemes, the fund charges levies to cover the risks it bears. In the case of a zombie scheme there is a specially designed levy calculated differently to usual PPF levies. With perfect monitoring, no levies for such a zombie would, in theory, be needed; as soon as the PPF funding level fell to 100% the scheme would be transferred to the PPF (or forced to buyout). This kind of instantaneous action is clearly not possible in practice and, as such, the PPF is exposed to some risk. To calculate the appropriate compensation for the PPF, the levy charged is based on the theoretical value of a one-year put option. The basic idea is to calculate the theoretical expected value of the amount the PPF could be on the hook for.

And so whilst trustees have the benefit of the PPF as a backstop, they must also take into account the impact of levies, which effectively act as a drag on investment performance. This drag can be significant, particularly so for schemes that are not well-funded and/or adopt risky investment strategies.

## MEASURING SUCCESS

With or without a sponsor in place, determining an appropriate return to target in a DB scheme is challenging. We believe trustees need a way of measuring success that focuses on what members ultimately care about. We believe that trustees should, in general, define success as meeting all pension benefits. We have explained the philosophy of this approach [elsewhere](#) (or [here](#) in a more light-hearted summary on our blog). In the event of 'failure', the aim should be to meet as much as possible. With this in mind, the more precise success metric we adopt is:

**Proportion of Benefits Met (PBM) = present value of benefits paid divided by present value of benefits promised<sup>3</sup>.**

(Here the benefits 'promised' are those targeted under the zombie scheme). To judge the attractiveness of a strategy, we focus on various statistics based on PBM calculated over thousands of scenarios of the future. These scenarios allow for the possibility of falling into the PPF in the future or buying out early should scheme experience be favourable. In particular, we consider:

- 1) The chance of meeting all benefits (promised under the zombie arrangement). This is the proportion of scenarios where PBM is 100%. Note PBM cannot exceed 100%.
- 2) The expected PBM value, or EPBM – this is the mean average of the PBM values calculated over scenarios.
- 3) The 1 in 10 worst PBM value. This reflects a poor or downside case that corresponds to the 10th percentile outcome of scenarios<sup>4</sup>; and
- 4) The 1 in 200 worst PBM. This represents an extreme tail scenario, subject to modelling limitations and the ability to reflect tail events in detail.

3. For technical reasons, this definition of PBM is slightly different to that given in [earlier thought pieces](#) – this time we also allow for discounting. This is so that in the special case where there is no premium charged by insurance companies, no longevity risk and no investment risk taken in the self-sufficiency strategy, trustees would be indifferent between buying out or running as a zombie under this metric.

4. Note that usually the 1 in 10 PBM measure is lower than EPBM but not always. For example, if 95% of scenarios have PBM = 100%, then the 1 in 10 value of PBM is 100% but the EPBM is less than 100%.

We also consider an ‘adjusted’ definition of PBM that tries to allow for intergenerational aspects. Under this approach, there is a penalty in the PBM metric for providing an uneven proportion of promised pensions over time. This helps capture that under a zombie arrangement, early cashflows are fully met but later cashflows may not be<sup>5</sup>. (This adjusted metric is more complicated to define but is explained in Appendix A.)

It is important to note that these metrics, such as 1 in 10 worst PBM are long-term measures calculated over the **whole remaining life** of the scheme (they are not one-year numbers!) and as such a focus on improving this metric should not necessarily be seen as a high-risk strategy.

**A SWEET SPOT FOR INVESTMENT STRATEGY?**

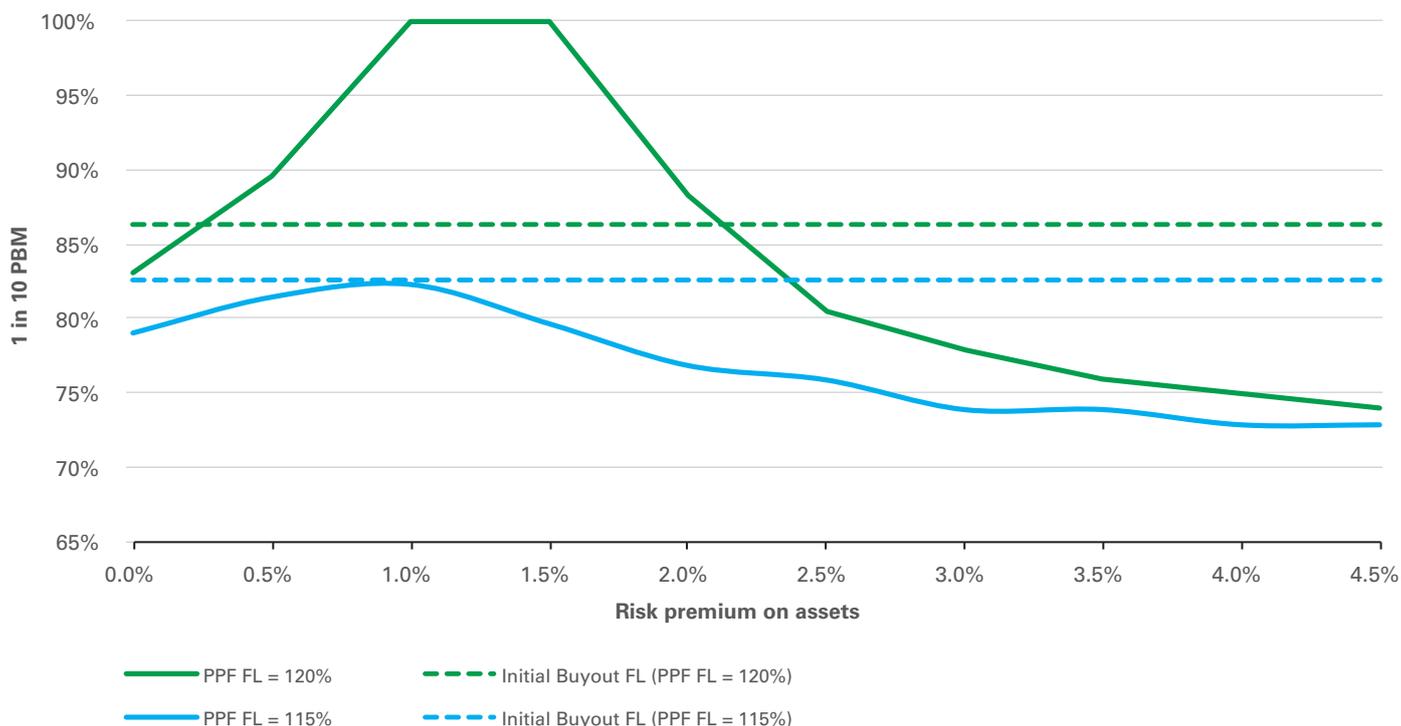
By targeting a higher return, trustees can expect to close the deficit faster. However, targeting too high a return can increase the volatility of the strategy, raising the risk of

the scheme falling into the PPF; this could result in lower and/or more uneven benefits than had the scheme bought out to start with. In addition, return-seeking strategies incur higher levies, which act as a drag on performance.

The question is, what is the ‘sweet-spot’ target return for a zombie scheme – and how attractive are its prospects?

To this end, we considered several different schemes, varying in terms of their initial funding level but otherwise the same. We modelled them allowing for investment risk, longevity risk and interaction with the PPF. In considering the PPF, we took account of both its function as a backstop but also the levies that need to be paid (which depend on the investment strategy adopted). Figure 1 shows how 1 in 10 outcomes vary depending on the level of return targeted for two different schemes. Figure 3 in Appendix B shows more detailed results including more extreme outcomes and adjustments to reflect intergenerational inequality.

Figure 1. 1 in 10 long-term outcomes



Source: LGIM calculations. For illustrative purposes only.

5. Whilst this metric could help, in practice more detailed analysis of the risk-return trade-off faced by individual members may be needed. BHS members were given a choice whether to transfer to the new zombie scheme, opt for a lump sum (if they have a small pension) or remain with the current scheme being wound up.

### More granular asset allocation

For simplicity, and just for illustrative purposes, we assumed in our calculations that investment risk achieves a Sharpe ratio of 0.4. More generally, the effective risk efficiency (in the context of scheme liabilities) can vary depending on the funding position and return target. For example, if a scheme is well-funded, a cashflow-matching strategy can be attractive, at least in part. This is due to the elimination of reinvestment and early-sale risk, and the harnessing of the illiquidity premium<sup>6</sup>. Care is needed, however, as risks from uncertain longevity, imperfect hedging of LPI and CPI benefits, uncertain benefits (e.g. spouse ages) mean that perfect cashflow-matching is impossible. As such, **a cashflow 'aware' solution** can make sense.

### Consolidating zombies?

A related 'hot topic' at the time of writing is scheme consolidation. Work by the Pensions and Lifetime Savings Association (PLSA) on a potential superfund model suggests the price of entry to a consolidator might be 80-85% of the full buyout cost. Interestingly, this is similar to the level at which we find that operating as a zombie, rather than immediately buying out, could appear attractive.

There are many reasons to be sceptical on the idea of a superfund allowing a viable sponsor to detach itself from a scheme at less than buyout cost. Not least, the superfund would not be operating on a level playing field with insurers also promising to meet all benefits. But consolidating many zombie schemes, which are operating on a best-efforts basis, would not suffer from the same complication and could lead to economies of scale. However, many issues would remain; for example, if the consolidation vehicle performs poorly, would a relatively well-funded zombie that enters be happy to subsidise the existing schemes?

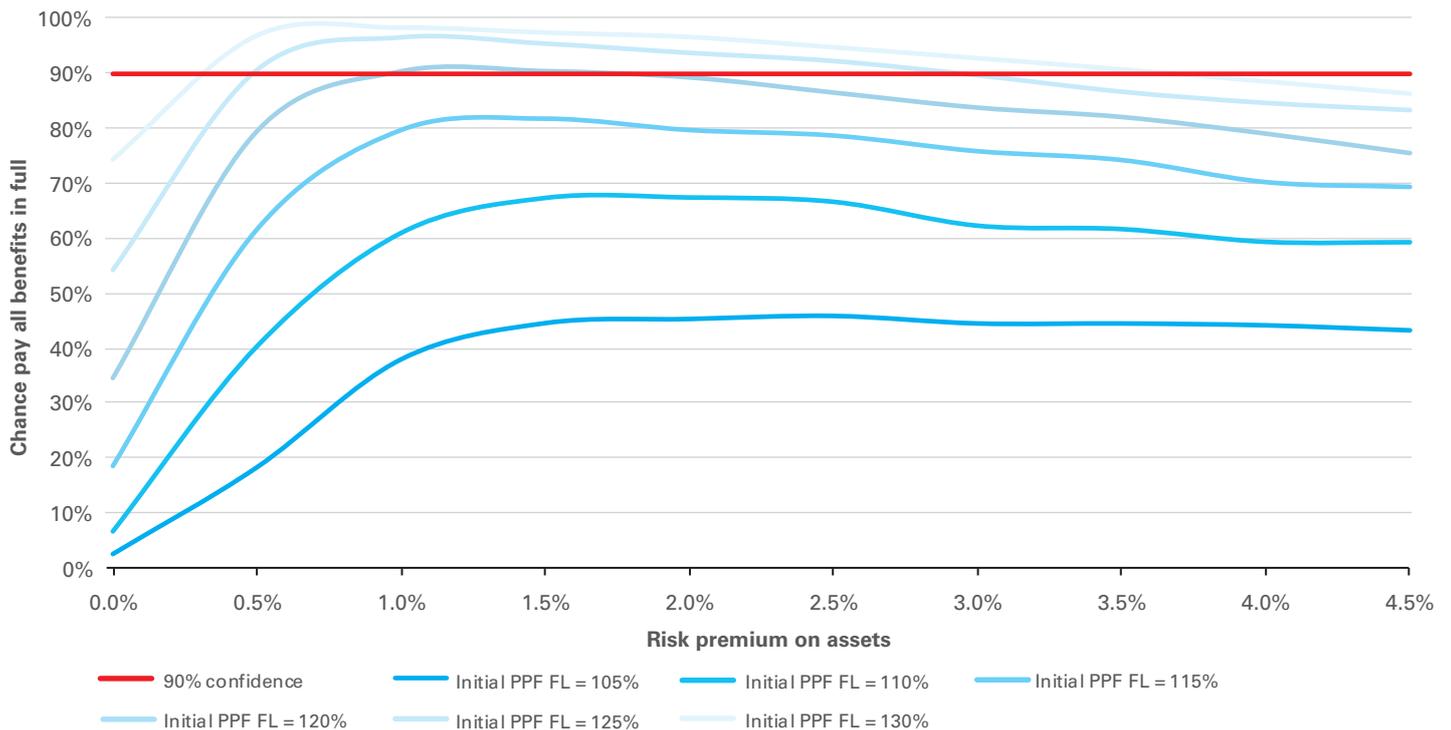
If we assume trustees are interested in maximising the success of 1 in 10 outcomes – an example of a cautious but non-zero risk strategy – the results suggest that at 115% funding on a PPF basis (about 83% funding on a buyout basis in this example) or lower, it would not be worthwhile to run as a zombie. No matter what return is targeted, 1 in 10 outcomes (represented by the solid lines) are worse than what could be secured from the outset by winding up (represented by the dashed lines).

But from around 120% PPF funding, or about 85% on a buyout basis, running as a zombie begins to look appealing – the solid lines (1 in 10 PBM) rise above the dashed lines (the initial buyout funding level). However, the charts show it's important to target an appropriate return – our results indicate that around 1.0%-1.5% over the risk-free rate is ideal at 120% funding on the PPF basis. Due to longevity risk and levies, low-risk investment strategies would make 1 in 10 outcomes worse than what could be achieved from winding up on day one.

Of course, as can be seen in Figure 3, there is no free lunch and although 1 in 10 outcomes may be better than that from buying out now, tail risk remains (albeit risk that is limited by continued protection from the PPF). Buyout is the only way to virtually eliminate all uncertainty but this is not to say that a zombie approach cannot offer an attractive risk-return trade-off in some circumstances.

6. See this paper for an explanation: [http://www.lgim.com/library/knowledge/thought-leadership-content/foresight/LGIM\\_Foresight\\_MAR\\_2016.pdf](http://www.lgim.com/library/knowledge/thought-leadership-content/foresight/LGIM_Foresight_MAR_2016.pdf)

**Figure 2: The chance benefits can be paid in full for different initial funding levels and target returns.**



Source: LGIM calculations. For illustrative purposes only.

### HOW LIKELY ARE ZOMBIES TO SUCCEED?

To finish our illustrative results, Figure 2 shows how the chance of 'full' success varies with the initial funding level and return target. Consistent with Figure 1, strategies only look attractive from around 120% funding on a PPF basis – when members can be more than 90% confident of meeting benefits with what appears to be a sensible return target.

### BESPOKE ANALYSIS IS NEEDED

Taken together, the results suggest that should the option become more widely available, becoming a zombie would only appeal to schemes that are relatively well-funded – and that also target an appropriate level of return.

Regardless of whether legions of zombie schemes do emerge over the medium and long term, or their numbers remain contained, our analysis is only indicative and will vary substantially with a scheme's specifics, such as its duration or level of costs. The purpose of this paper is not so much to give definitive answers, but rather to give a flavour of a potential framework to support decision-making; a critical challenge would be communicating the risks involved in 'zombification' to members.

We would be delighted to discuss our findings with you in more detail, and show how they could become relevant for your scheme. To set up a meeting or request more information please contact your Client Relationship Director.

**APPENDIX A: ADJUSTED PBM**

To define 'Adjusted PBM' we first calculate, for each year *y*, the percentage shortfall

$$s_y = 1 - b_y/f_y,$$

where *b<sub>y</sub>* = benefits paid in year *y* and *f<sub>y</sub>* = benefits targeted in year *y*. We then define:

$$\text{Adjusted PBM} = 1 - \sqrt{\frac{\sum_y P_y s_y^2}{\sum_y P_y}}$$

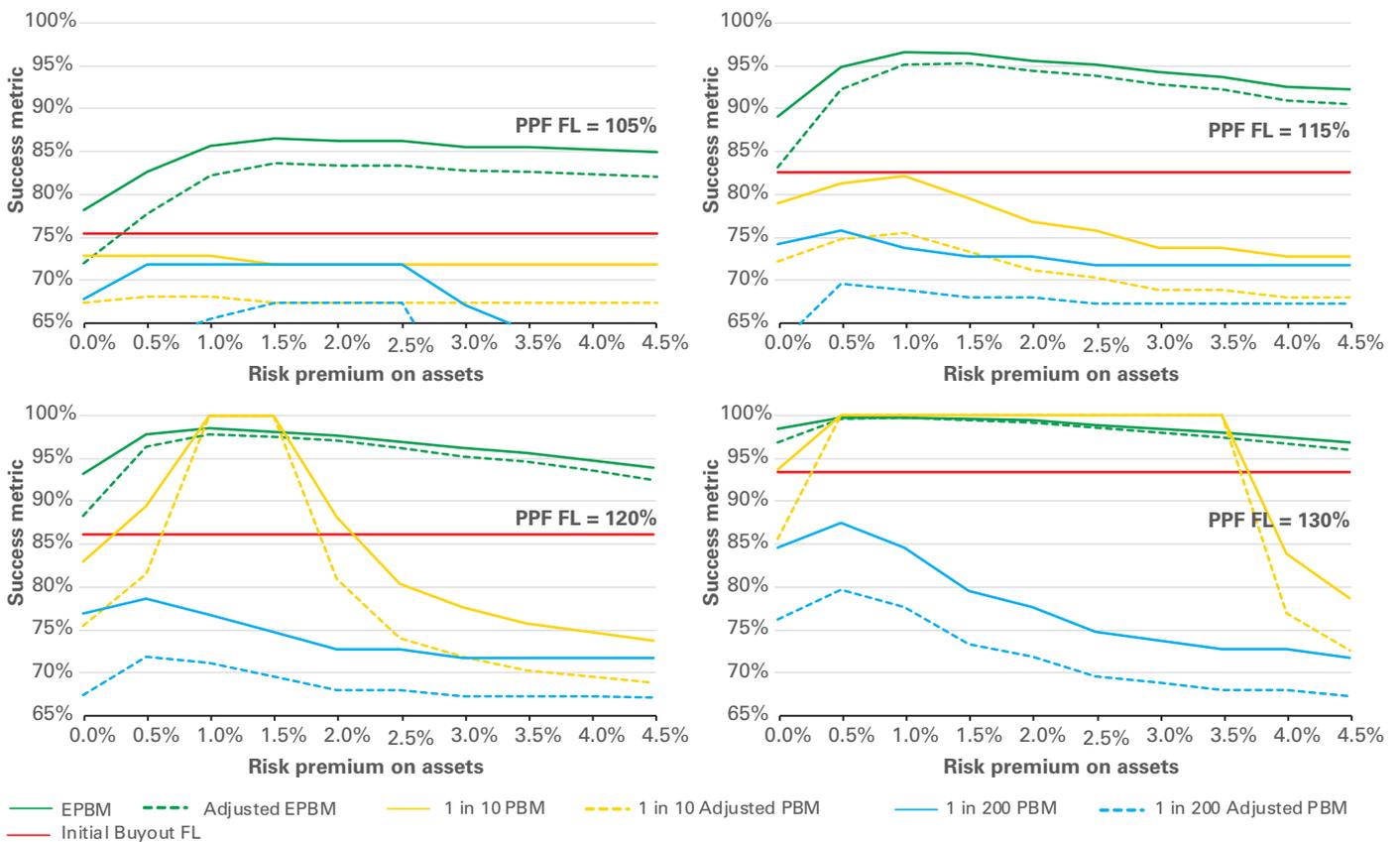
where *p<sub>y</sub>* is the present value of the benefit promised in year *y*.

A simple example of this in action is shown below for two scenarios over 4 years assuming the discount rate is 0% for simplicity:

Year	Benefits targeted	Benefits paid Scenario 1	Benefits paid Scenario 2
1	£100	£75	£100
2	£100	£75	£100
3	£100	£75	£50
4	£100	£75	£50
Traditional PBM		75%	75%
Adjusted PBM		75%	65%

**APPENDIX B: DETAILED MODELLING RESULTS**

**Figure 3. How our measures of success vary with return target. Results are shown for four different funding levels.**



Source: LGIM calculations. For illustrative purposes only.

Scenario 2 is considered as good an outcome as scenario 1 under our 'traditional' PBM measure, with the PBM being 75% for both. But under our adjusted measure it is considered worse than scenario 1 because it meets an uneven proportion of benefits over time. Under our methodology it has an 'adjusted PBM' value of 65%.

### APPENDIX C: MODELLING ASSUMPTIONS

Some (but not all) of the key assumptions made for our illustrations are given below:

- The scheme is 100% interest rate- and inflation-hedged
- The Sharpe ratio achieved on the scheme's assets is 0.40
- Longevity risk amounts to 2.5% pa volatility on the liabilities (consistent with the PPF's assumption for levy purposes)
- Buyout liabilities are initially 1.4 times the liabilities on a PPF basis
- The scheme maintains a constant target rate of return (in percentage terms) on its assets (in practice the scheme would risk up or down as its situation changes)
- Asset returns are net of costs
- The buyout basis is initially gilts minus 0.5% and tends towards gilts as the duration shortens. These could be relatively low discount rates but they are used in conjunction with best-estimate cashflows
- The initial scheme duration is c.20 years
- PPF levies are calculated in line with the levy rules for schemes without a substantive sponsor. For prudence and simplicity of illustration, we did not apply any of the 'Factors to convert liabilities to the adjusted basis' such as 'ConvFacNonPen'.
- We did not model any scheme risks other than investment and longevity risk e.g. we did not allow for 'LPI risk' (risks from any delta hedge being inaccurate) or 'CPI risk' (risks from hedging CPI-linked benefits with RPI-linked instruments).

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