Off-Market DB Pensions (Staple Inn 23 March 2016) : Addendum (Jon Spain)

With hindsight, following on from emails between one participant and myself, I have decided it would be a good idea to supplement the presentation with some extra comments. The slides covered five separate sections:

- general points {A} ([02] through [16];
- random numbers ([17] through [19];
- simple contracts ([20] through [28];
- complex funding ([29] through [35];
- general points {B} ([36] through [39].

Frankly, I think it would have been better had I just omitted the "complex funding" stage. Had I done so, then I hope that, as read-across from simple contracts, the following high-level points would have been clearer. It would also have been better if I had used "expected return" instead of "yield" in the chart on slide [26].

1. As an axiom, the "best estimate" discount rate is taken to be the best estimate of the prospective return over a long period but I am not saying how to reach the best estimate. Instead, I am suggesting that off-market tends to deliver results closer to best estimate because the variations are smaller.
2. Although I have adopted one means of estimating a best estimate starter, it is just one possibility among many and does not work in all cases (see worked example below).
3. Using mark-to-market tends to be far less efficient than going off-market.
4. If we can't get relatively simple stuff right, how can we suppose we can do more complex stuff?
5. Using discount rates is actually nothing like as helpful as carrying out robustly backed stochastic projections.
6. We need the stochastic projections in order to be able to advise the sponsor and the trustees properly.
7. Capitalisation and the associated discount rates are neither necessary nor helpful for long-term projects.

For clarity, I used 10,000 sets of random numbers, with different yields at each point and different returns over each period. The distributions have been picked to fit the variables over two different periods, reflecting when ILGs weren't, and then were, available. Each pair ("before" and "after") of distributions for each variable has been moderated in order to allow for correlations and then blended. So we have 10,000 random walks, within which:

- I assess what I think the mark-to-market initial assumed discount rate would be;
- I do the same for off-market assumptions, using one approach;
- I simulate the end-results under both approaches;
- within each simulation, I back-test to see what is needed to produce desired result (which IS the "best estimate" position;
- I investigate how far away assumed initial assumptions were from required initial conditions.

Worked Example For simple contracts, fund developments over time are shown on slide 24 and the implied yields are shown on slide 26. Using correlated random numbers (first tab on left), consider a nominal endowment, with assets equally split between conventional gilts and equities. The market-related numbers are on the left and the off-market numbers are on the right. The numbers below are distribution means and we need to bear that in mind.

Fund Development Taking what I have assumed would be adopted for baseline pricing, the initial fund would be 4,083 (MR) or 2,547 (OM), which would end up at 20,502 (MR) or 12,826 (OM). The multipliers are nearly the same at 5.02 (MR) and 5.04 (OM). Both are too high and we need to start with 2,362 for both (same performance) in order to end at 10,000 (adjusted). Note that the multiplier of 4.23 is not the same as 5.02 or 5.04. That is what confused me yesterday morning but it is a distribution effect, which I tested last night.

Associated Yields Calling them returns would have been clearer! The initial baseline funds of 4,083 (MR) or 2,547 (OM) were derived from expected returns of 6.87% (MR) and 10.16% (OM). To end up at 10,000 (adjusted), we need to use 10.80% for both (same performance). In order to get to that, we need adjustments of 3.93% (MR) and 0.63% (OM), which is why I reckon OM generally, but not always, delivers a better best estimate pricing strategy.

Non-Correlated Results Looking at the third tab, the initial expected returns would have been 7.44% (MR) and 11.23% (OM), requiring adjustments of 3.50% (MR) and -0.29% (OM), which are of a similar order of magnitude to the correlated results.

Significance Looking at the tab on the right, using a t-test, for the correlated case, the lower part of the chart shows the same mean return adjustments needed as shown above. The upper chart shows correlated test statistics of 89.30 (MR) and 14.79 (OM), way higher than 1.96.

Jon Spain 25 March 2016

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