



Optimising Future Pension Plans – Phase 2

The performance of a CDC pension scheme against alternative pension schemes – Questions

The following questions and answers are from the webinar on CDC pensions schemes hosted by the Institute and Faculty of Actuaries in December 2022 in which Professor Catherine Donnelly presented the latest findings from the Optimising Future Pension Plans research.

Q. While I'd love to see an increase in the 8% AE [automatic enrolment] minimum, in the context of the cost of living crisis I'm less optimistic this will get through for some time. The benefit of CDC as a whole of life solution is that the power of pooling leads to on average >30% better outcomes. Which helps gear the 8% to closer to 11%.

A. It depends on what model you're using. From everything I've read there needs to be some work done about concerns related to intergenerational risk sharing. There needs to be more work from proponents of CDC schemes to alleviate those concerns.

Q. Have you got plans to do some further research to compare alternate designs with an age-related accrual rate CDC design? (The work we've been doing at Aon on age-related accrual rate CDC designs suggest these solve some of the intergenerational comments raised.)

A. We don't have that within the programme, that would be future research. There are papers in the literature on this looking at age-related accrual rate in CDC pension plans, where they have actuarial fairness, you could start looking there as well. You still get the issue where the standard deviation goes up over time. The median or mean income is typically lower for first generations and then stabilising as it matures and going up in the last generations when the risk is crystallised which may or may not work in the favour of the last generations. We still have this intergenerational risk transfer.

Q. An observation that on the slide around who bears risk, it's more granular than just "members" for DC and CDC. For DC it is "members individually" while for CDC it is "members collectively".

A. Yes, very true.

Q. Could you confirm that post retirement only CDCs are similar concept (albeit with differences) to Tontines or some recent research I saw at the SoA called VALUE Annuities?

A. Yes, similar concept.



Q. Is it always the case that first generation gets higher pensions? Surely it depends on the size of pension increases? A scheme that targets large increases (like inflation plus a bit) could work the other way around and give later generations higher pensions?

A. The easy way to stop this is to do the age-related benefit accrual but you'll see that the median income of the first generations will be lower because basically the effect of investment returns is softened so they tend to get a lower pension.

Q. This sounds like good, useful research. Many thanks to all involved.

A. n/a

Q. I appreciate that people want a level income in retirement. But they also typically have quite low amounts in their DC accounts. To maintain any kind of decent income in retirement they will have to rely on a mixture of their DC accounts (as turned into annuity income in the pooled annuity fund) PLUS their State Pensions. Given the popularity of early retirement, and especially with possibility of faster-than-expected increases in State Pension age, I suspect that people may well want to take income from their DC accounts before State Pension age, and, with the desire for a steady annual income, to take an amount of $(X + \text{State Pension})$ from retirement to State Pension age, and then an amount of X from State Pension age. Could the CDC arrangements modelled offer such an income? What might the effect of offering such an income structure, which has a rather shorter duration than offering all income as lifetime annuity, have on the modelling of the CDC arrangement?

... in effect a lot of the longevity risk that might increase variability in results would be transferred to the State Pension arrangement

A. Yes, why not. This would be another study to understand the impact of it.

Q. How does a pooled annuity fund differ to a CDC decumulation-only solution? They seem a bit similar...

A. A pooled annuity fund can be run as a CDC decumulation-only solution, you could also have a CDC decumulation-only where you also share investment risk. So in the pooled annuity fund I'm talking about only longevity risk was shared but you could do investment risk as well. Basically you could say I'm going to pay you a pension and every year I'm going to give you a pension increase in retirement, join at 65 say when you retire with your DC savings and then we could calculate a pension increase in the same way as we did for the whole life scheme, you're just doing it for people aged 65 and over. And you could still share investment risk. That's a study to look at the build-up of investment risk. There's also a build-up of systematic longevity risk. If you've more people it doesn't remove it. We have also the membership profile, so how many people are in your scheme at different times, that would also have an impact on the risk and the risk profile for later generations because if you have a lot of risk building up over time and a lot of people and then it shrank down you'd have a few people bearing a lot of risk.



Q. This analysis is very interesting, but is there really any value looking beyond the next 50 generations at the very most? The chances of any scheme remaining unchanged for this long seem remote.

A. By looking at a lot of generations, we see the full development and stabilisation of the mature scheme stage (the time during which people retire and new members still join). If we stop new generations at time 50 (i.e. after 50 generations), then the first generation has been retired for only 10 years when the scheme no longer has new entrants. This means that we don't see the full profile of the scheme. Of course, the latter could be more realistic for a private sector. We would see a similar pattern in terms of a sharply increasing median or mean replacement ratio, in conjunction with a sharply increasing standard deviation of that replacement ratio, when the new entrants stop flowing in.

Q. There is a risk that the CDC pension in any year is lower than the previous year (or only marginally higher). This will be hard to explain to the members. Is there any warning given to members (and employers) about this?

A. What I like about this pension increase approach is that it's not obvious to members that they're effectively making a loss because in some way the discounted value of their accrued pension is going up and down, it could be a negative change compared to previous years, but because the accrued pension is expressed as an accrued pension plus future pension increases then if your pension increase last year was say 2% and this year it's 1.5% you still think I'm getting more money even if the discounted value of your pension has dropped, you wouldn't be aware of that because you're just looking at the accrued pension. I'm not saying you should hide risk from members but to what extent do they need to worry about fluctuations in asset value when we're investing for the long-term. That's the job of the scheme manager but do the members have to worry about that. You don't want to panic people unnecessarily. What is the appropriate way to communicate that risk?

Q. So would you advocate some kind of fixed term (level or increasing) annuity for say 20 years post age 65 followed by a life annuity from age say 85? The individual's DC pot split to pay for those two products. The insurer's longevity risk is smaller in magnitude (possibly bigger relatively) at the older age, where there are fewer survivors at age 85 than at age 65. Would this be a fairer share of the risk by generations?

A. We have to work to try and understand what this investment risk sharing means. So longevity risk sharing is simpler to understand and an easier case to make, it has a lot of advantages in terms of you don't have to target a certain age and say I'm not going to live past this age you can just do things on an expected present value basis. But you still do have systematic longevity risk, so whether you buy guarantees or some kind of life annuity to mitigate against that is a possibility. When should you go into some kind of longevity pooling structure, if you're young or your chance of dying is small there's not much benefit of doing so because the expected gain you get from pooling longevity risk is your chance of dying in that year. If your chance of dying that year is 1% then your expected gain would be 1% of



your fund value, but if you die then your value would be shared out among the others. You may be better waiting until your chance of dying is higher and then from that point onwards you go into one of these longevity risk sharing structures. Another question is about when that is optimal. These are very complicated questions and there are many different answers depending on people's particular setup.

Q. I think your conclusions (and criticisms) disappear with age related accrual, and with annuities properly priced. Is that right?

A. Based on past literature, no. What will disappear if you do age-related accrual is you will see a lower income for the first generations, it will take a similar path to the standard deviation of median or mean income (I know they're not the same thing but either one you look at you'll see the same path). So you still have the inter-generational risk sharing and its basically that the first generations have a lower risk in the scheme, at the mature stage of the scheme its fairly stable so the risk born by those generations in the scheme when its mature, but in the last phase of the scheme when they are no more people joining and we've just got people in retirement and we're crystallising any losses or gains the risk in the scheme goes up quite a lot and that will happen whether you have this age-relate accrual or we have a constant rate of benefit accrual. From the studies I've seen in the literature, they don't call it age-related benefit accruals, it's actuarially fair which is meant to be the same thing.

Q. Could you say a bit more about deferred members? I am concerned that to the extent that their accrued pension pots get pension increases in excess of the risk-free rate available elsewhere, they are being subsidised after leaving by other members/employer contribution to costs etc. Is there fairness between actives and deferreds?

A. This is a good point. We haven't studied deferred pensioners. I cannot think of an obvious unfairness between actives and DPs.

Q. Our work on CDC suggests there are also other design features that will help eliminate the potential for cross-subsidy that Catherine has talked a lot about. Wait and see what the next consultation on CDC reveals...

A. Yes, there is so much scope for innovation in these schemes.