

Don Boyd to me

May 29

Hi Yimeng,

Here's a continuation of the NLP approach, working with UCRP data (because it gives us known values to test against). The basic idea is the same as before:

- construct an initial guess of closed-plan cash flows
- push it around so that it hits various constraints (e.g., so that we match "known" pv and "known" duration), subject to a distortion/penalty function that penalizes moves away from the initial guess

A few comments:

1) Instead of using your benefit model values for UCRP as the initial guess it uses values from a Gaussian curve that fits the known data well (and for robustness it examines initial guesses based on a perturbed version of the fit curve and on a wholly made up but plausible curve); I have not checked this yet against the initial guess based on your benefit calcs but that should be easy to do.

This approach could be used when we don't have time or energy to construct an initial guess based on an actuarial model. It could be coupled with creation of several prototypical curves - e.g., you could create 10 or so prototypes of closed-plan benefit cash flows with variation over variables we might know - average age, COLA, benefit factor and we could choose a prototype that made sense.

2) A few big steps still left for closed plans:

- we won't really know pvb of actives, term vested, retirees - we will know the pvb for their sum
- and we won't really know the pvb, we'll know the aal


That needs to be dealt with. Plus incorporating info we may know from NC.

I think everything you need to run it is attached.


Let's talk after you've worked through it.

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ucrp full
approach(5)

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ucrp_djb

 Spreadsheet