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## A VIEW FROM THE SOA'S STAFF FELLOW FOR RETIREMENT

*By Andrew Peterson*

As mentioned by Eric Keener in this issue's "Chairperson's Column," one of the priorities of the Pension Section Council this year is to do a better job of promoting research projects to our membership as they are completed. In that spirit, I'm turning over the rest of this column to Kevin Binder, chair of the Pension Section Research Team, who wrote the following summary of two recently completed projects that are now posted on the SOA website.

### RESEARCH AND REALITY—A LITERATURE REVIEW ON DRAWING DOWN RETIREMENT FINANCIAL SAVINGS

The first paper is on the topic of drawing down retirement savings and was written by a team of researchers from University of Waterloo. The paper is a literature search, so while it is organized by the authors and reads like a paper written by the authors, it is really a summary of work on the topic by many authors. There are footnotes throughout the paper with sources if the reader would like more information. The paper is divided into three sections.

1. How do retirees draw down their financial savings: Do employees prefer a lump sum or an annuity? Not surprisingly, most participants prefer a lump sum, and most do not have a thought-out systematic process for drawing down the funds. This approach increases the risk of outliving retirement savings if the drawdown level is too high, or conversely, living at an unnecessarily sparse living standard if the drawdown level is too low.

2. How could retirees draw down their financial savings: This section of the paper has an exhaustive summary of available types of annuity products. It discusses the advantages of annuities and their shortcomings. Some of the shortcomings (e.g., lack of inflation protection) can be addressed through product design,

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other shortcomings (e.g., high price, bequest motivation) are discussed as well.

In addition to annuities, the paper also discusses a number of self-managed drawdown strategies. For example, a simple drawdown plan would be to withdraw 5 percent of the account each year. The self managed strategies, are divided into fixed and variable strategies.

Finally, this section of the paper discusses hybrid strategies, combinations of annuities and self-managed drawdown strategies.

3. How should seniors draw down their financial savings? This section of the paper summarizes several optimization models that have been constructed to attempt to determine the drawdown. For example, there have been several papers written on how to minimize the probability of lifetime ruin. This section of the paper also discusses dynamic micro simulation modeling that has been developed to answer this question as well as the pros and cons of some level of mandatory annuities and ways to encourage annuities.

   I think the biggest value of this paper for a pension actuary is that it discusses the need for annuities (to some degree) for an effective drawdown strategy and why, despite the need, annuities are rarely used. Hopefully actuaries can play a role in encouraging the increasing use of annuities in drawdown.

## EMBEDDED OPTIONS IN PENSION PLANS

The second paper is on pension plan embedded options. It is part I of a larger project on the topic. The paper is by PricewaterhouseCoopers LLC (PWC). This paper,

1. Defines embedded options
2. Catalogues the embedded options found in pension plans
3. Surveys embedded options prevalence and how they are valued

Part II of the study will provide a first step towards developing methods that can be used to value embedded options.

So what are embedded options in the pension context? While it is difficult to provide a succinct definition in the pension context, the paper provides examples of plan features that may have zero value if a single point estimate of the economic factor underpinning the plan feature is used, but

intuitively have value. For example, which is more valuable, a cash balance plan that uses the S&P 500 index as a crediting index with a principal guarantee or the same plan without the guarantee? Clearly the principal guarantee has value. However, if a point estimate (e.g., 7 percent) is used for the S&P 500 return the principal guarantee plan feature will have no value.

PWC found that over half (56 percent) of private sector plans have embedded options. They also found that most actuaries use a best estimate single assumption to value the embedded option. So it would seem that in many cases the embedded options are not being valued. It is important for practicing actuaries to read the paper to ascertain if their plans have embedded options and to be thinking about how they might better account for their value. Sophisticated option-pricing techniques exist in other disciplines but appear not to have been adopted in any meaningful fashion in pension valuation practices. Hopefully part II of the paper will suggest methods to value these options in a more rigorous fashion.

## CONCLUSION

Thanks to Kevin for writing these summaries; both reports are relevant to the current work of pension actuaries. I encourage actuaries to review them and in particular consider how you might contribute further to the intellectual capital development in these areas. Feel free to suggest or propose a follow-up study, both of these projects developed directly from section member suggestions. Ideas can be submitted to Kevin or me .

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