

October 31, 2016

Assessment and Disclosure of Risk
Actuarial Standards Board
1850 M Street, NW, Suite 300
Washington DC 20036

Subject: Third Exposure Draft Proposed Actuarial Standards of Practice - Modeling ('Proposed Modeling ASOP')

Dear Actuarial Standard Board:

Thank you for the work of the ASB and the ASB's Modeling Task Force on the Proposed Modeling ASOP.

Executive Summary

The current definition of "model" is not clear enough for actuaries to apply. I suggest the definition of model be revised as follows:

Model - A simplified representation of relationships among real world variables, entities, contingent events and/or outcomes using statistical, financial, economic, mathematical, or scientific concepts and equations.

I suggest the following definitions be added

Measure – A model where either the intended purpose of the calculation is to produce a deterministic, snap-shot present value as of a measurement date using a single set of variables or where the values of all of the variables are pre-determined for the intended purpose.

Variable – An input into a model for which there are multiple values that are appropriate for the intended purpose of the model. An input item is a variable if multiple values are possible and appropriate, but the use of a single value has been specified by law or other.

I suggest that the scope of the ASOP be revised to exclude Models which are Measures.

Revisions to Definition

The definition of “model” from the Proposed Modeling ASOP is as follows:

Model - A simplified representation of relationships among real world variables, entities, or events using statistical, financial, economic, mathematical, or scientific concepts and equations. Models are used to help explain a system, to study the effects of different parts of a system, and to derive estimates and guide decisions. A model consists of three components: an information input component, which delivers assumptions, parameters and data to the model; a processing component, which transforms inputs into estimates; and an output component, which translates the estimates into useful business information. A model evolves through a life cycle as follows: (1) a specification phase, (2) an implementation phase, and (3) a production phase, that consists of one or more model runs.

To make the definition clearer, it would be helpful if the definition included a reference to “contingent events” instead of “events”. Additionally, the definition would be clearer if it referenced outcomes. I believe many pension models would be focused on the relationship between outcomes and variables. Also, it would be clearer if all explanatory text were removed from the definition. Lastly, I suggest that the concept of a “Measure” be incorporated and that the scope be modified to exclude models that are measures. The combination of these changes would make the definition clearer.

Additional Definitions

The definition of the “model” would be clarified by defining certain terms that are used within the definition of model.

- **Measure** - As currently written, the scope of the ASOP can be read as so broad as to encompass almost all actuarial present value calculations. By incorporating the concept of a “Measure” the scope of the ASOP is more limited and focused on models which will benefit from the Proposed Modeling ASOP.
- **Variables** – An input item can be globally a variable but with respect to a particular assignment there may only be one correct value for that variable. For example, a pension actuary may have software that allows the actuary to convert a monthly annuity amount to the lump sum optional form of payment. Globally, the participant data and plan provisions (including actuarial equivalence assumptions) are input items for software. But, with respect to an individual with a given measurement date, there is only one correct set of inputs that will produce and document the individual’s correct optional lump sum payment. Thus, with respect to the intended purpose of the lump sum calculation the value for all variables is pre-determined – only knowable input items.

Providing a definition of variable that makes it clear that an item is not a variable if there is only correct value for the intended purpose would cut down on confusion regarding the definition of model. If there are no variables, contingent events or entities, then the actuarial services do not

involve a model. It would also make it clear to pension actuaries that individual benefit calculations are not models, but that other relatively straightforward present value calculations could be models depending on their intended purpose.

- **Estimates** – Some actuaries read the definition of model so broadly as to interpret any present value calculation as a model. For example, some pension actuaries would read the current definition of model to include the calculation of funding target for an IRC Section 430 valuation because the funding target itself could be construed as an estimate of a plan’s obligations. However, I believe that funding target is a statutorily defined measure of a plan’s obligations. The funding target is a deterministic, snap-shot calculation where the funding method and certain assumptions are defined in law. Law dictates how the remaining assumptions should be chosen. If independent actuaries were to use the same plan provisions, participant data and assumptions, they would be expected to arrive at very similar results. Thus the calculation of funding target is not a model.

I believe actuarial services would only involve a model with respect to funding target if the actuarial services produced estimates of funding target such as a multi-year projection of the funding target or a sensitivity analysis of funding target. Clarifying the definition of estimates to make clearer which reading is meant would be very helpful.

A definition of “estimates” may not be needed if the explanatory text is removed or otherwise clarified.

- **Entities** – I do not know what “entities” means in the context of this definition. A definition would be appreciated.

Explanatory Text

The first sentence appears to be the definition and the additional sentences appear to be explanatory text, but this is not 100% clear. For example, is it necessary to satisfy the description in the second sentence to be a model? Is it necessary that the result be “useful business information” to be a model? It would be helpful if it was clearer which part of the text is definition and which part of the text is explanatory.

From the second, third and fourth sentences, it is not clear if the nature of the services, the purpose of the actuarial services or the process of the actuarial services is more important in determining whether or not those actuarial services are a model. For example, could two actuaries perform the exact same services, but whether or not the services is a model depend on the intended use for the work product?

The definition may be clearer if all explanatory text were deleted or moved to another section of the ASOP. In addition to making the definition clearer it may allow for the ASOP to include certain practice-specific information.

Pension Work Product

I am having trouble understanding which pension work products are models under the definition in the Proposed Modeling ASOP. To illustrate my confusion, below I describe two work product and my confusion.

- **Lump Sum Benefit Calculations** – The determination of a lump sum benefit as an optional form of benefit payment in some ways appears to meet the requirements to be a model and in other ways it does not. I do not believe that the conversion of an annuity benefit to a lump sum optional benefit form of payment should be a model to the ASOP. It should be a measure and outside the scope of the Proposed Modeling ASOP.
 - The calculation represents a simplified relationship between variables using mathematical equations. The variables are the plan terms (including the assumptions defined in the plan), the participant election and the participant’s data. The simplified relationship is the lump sum value compared to the annuity. Does this conform to the ASOP’s meaning of “variable” and “relationship”?
 - The conversion of the annuity benefit to a lump sum is the basis of an extremely important decision and thus the calculations guide a decision.
 - The calculation involves three phases: a specification phase, an implementation phase and a production phase.
 - The conversion of an annuity benefit to a lump sum does not produce useful business information nor does it produces estimates.
 - Arguably, if multiple actuaries performed the same calculations, they would come up with extremely similar results.
 - Does the determination of whether the lump sum benefit calculation is a model turn on the complexity of the calculations, how the assumptions are chosen or the number of possible results?
 - How is the conclusion about a lump sum benefit calculation distinguished from or harmonized with very similar present value calculations provided in domestic relations actions or other litigation?
 - How is the conclusion about a lump sum benefit calculation distinguished from or harmonized with from target liability calculations which are the sum of individual present value calculations?
- **IRC Section 430 Funding Calculations** – The majority of pension actuaries with whom I spoke concluded that a Section 430 valuation is a model; however, I did not sense a great deal of conviction with respect to their decision. I concluded that an IRC Section 430 valuation is not a model based upon the following:

- The purpose of the Section 430 valuation is to calculate the minimum required contribution under the Internal Revenue Code. The purpose of the valuation is not to represent a system, explain a system, study part of a system, derive estimates or guide decisions.
- The implementation phase does not produce estimates – it produces the target liability, the target liability normal cost, the minimum required contribution and other key results.
- The valuation may or may not produce useful business information depending on the plan sponsor’s funding policy.
- How is the conclusion about 430 funding calculations distinguished from or harmonized with the development of recommended contributions?
- How is the conclusion about 430 funding calculations distinguished from or harmonized with FAS calculations?

Funding target should be a measure and outside the scope of the Proposed Modeling ASOP.

I do believe a deterministic or stochastic five year projection of minimum required contributions would involve a model that is not a measure. If such services are provided, the purpose would appear to provide useful business information and estimates would be produced.

Further Guidance

While I appreciate that the ASOP cannot list all work products that are actuarial models, it would be helpful if there was an appendix identifying work products from each practice area and an explanation of why or why not the work product is model. From a sample list in an appendix, actuaries can use their professional judgment to extrapolate.

If an appendix is not possible, it would be helpful if the ASB Pension Committee reviewed or re-reviewed the Proposed Modeling ASOP against common pension work products to ensure that they agreed on how it would be applied to common pension work products, that there are appropriate differentiations between work products that are and are not models and that the definition of model is workable.

Actuarial Services

Some of the recommended practices in the Proposed Modeling ASOP should apply to all actuarial services without reference to whether those actuarial services involve a model. For example, Section 3.2 could be reworked and appropriately apply to all actuarial services. As I reviewed Section 3.2 and thought about my own practice, I agreed that it was appropriate that I should take steps to understand the working and limitations of software that I license for actuarial calculations even if I did not feel those services were a model.

A more workable approach may be to divide the Proposed Modeling ASOP into two ASOPs: an ASOP that provides guidance on recommended practices that apply to all actuarial services and a second ASOP that applies to modeling.

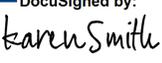
Conclusion

It is difficult to fully assess the Proposed Risk ASOP when there is confusion about the definition of “model”. I understand that issuing exposure drafts is extremely labor-intensive and time-consuming for the ASB and its committees, but I recommend that a fourth exposure draft be issued so that all interested parties may review the standard with a “final” definition of “model.”

Thank you for the opportunity to provide comments. I hope my comments are helpful. If they will be accepted, I may wish to submit additional comments after the deadline. While several months have already been provided, I have gained a much deeper understanding of the issues as I have had a chance to discuss the issues with colleagues. And, of course, much of this discussion occurred near the deadline and I am still digesting the views of my colleagues.

My practice area is pension and the focus of my practice is on micro to small private-employer pension plans. My comments are my individual comments and do not represent any organization.

Sincerely,

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Karen Smith

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