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Modeler Q&A With David Yu

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David Yu, FSA

In this article, we talk to David Yu, FSA, director and actuary, Modeling Center of Excellence, at Prudential Financial. David discusses his experience leading asset and retirement product model development.

Q: What kind of modeling work do you do, and what software platforms do you use?

A: I am responsible for modeling asset-liability projections for financial reporting and internal management purposes. This includes modeling of retirement liabilities, as well as the assets and reinvestments that are shared by multiple lines of business. I develop automated processes to build and run models.

Q: How do you plan or prepare for a modeling change?

A: We follow a well-defined Model Development Life Cycle (MDLC) to prepare for and make model changes. Users prepare business requirements for the model change. We, the modeling team, then review the business requirements and clarify changes with the users. We assess the complexity as well as the model design, and, if needed, discuss this with the platform vendor to better understand the effort required to affect a model change.

Q: What do you do if you find a bug that has an immaterial impact on results?

A: If we identify a minor bug, we then follow a reduced version of MDLC. This requires communication:

- Assess the potential materiality with model users.
- If no immediate changes are needed based on materiality, we will log the bug and fix it before the next model release.
- If immediate changes are needed, we will apply the changes, perform model testing, and release the changes to users.

Q: Do you document as you go along, or after you're done?

A: Our goal is to prepare documentation as we go along. Our main documentation produces technical specs for the models we develop.

Documentation also plays an important role in our internal modeling work. It is a more effective way of communication. We divide duties internally for development, technical review and peer review. We also often need to assign work to different developers, and then integrate the work. All this requires teamwork and effective communication, which is best done by documentation.

Q: What's your modeling pet peeve?

A: Using the annuity module to model retirement products. The annuity module is designed for an individual annuity, and it may not be equipped to model some retirement-specific features. For example, stable value products may have a book value discontinuance feature that provides a contract holder with book value payments in installments, rather than as a lump sum.

Modeling the installment payments can be challenging and we can do it, but it's so much easier if the right model is used from the outset.

Q: What's the most frequent piece of code that you usually forget the syntax for?

A: I would say the coding related to read/write access to external files.

Q: What was the last problem you encountered that had an easier-than-expected solution?

A: The last problem that had an easier-than-expected solution dealt with using externally projected asset (EPA) templates to handle more generic path-dependent external projections. Sometimes we need to incorporate external projections into the model. The projections may vary by scenario paths, and it can be challenging to incorporate them directly into an asset-liability projection. We found a way to funnel the external projections through EPA using out-of-the-box platform features, so that they could be included in the projection without making many changes to the process.

Q: What do you wish consultants understood about your models?

A: I would like consultants to understand our modeling process. It is also helpful to suggest ways to make it more modular. We are often in a situation where we need to provide a process for different businesses. The ability to reuse process components would make the process more effective and easier to maintain.

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