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# The Universal Life Work Group

by David E. Neve



### Background and Purpose

**T**he Universal Life Work Group (ULWG) of the American Academy of Actuaries' (AAA) Life Valuation Subcommittee was formed in July 2004. Its charge is to develop a new "principle-based" approach (definition follows) for statutory reserves and capital requirements for life products with certain types of benefits and guarantees, where the value of the contract obligations vary significantly due to such things as future interest rates or equity returns. Life products with these types of benefits and guarantees today include universal life products with secondary guarantees (ULSG) as well as variable universal life (VUL) products with guaranteed minimum death benefits (GMDB).

The work of the ULWG is part of a larger effort started by the AAA several years ago to work with regulators to develop a principle-based approach to reserves and capital requirements for all products. Other AAA groups that are working on various aspects of this new principle-based approach include the Standard Valuation Law 2 (SVL) Work Group, the Variable Annuity Reserve Work Group (VARWG) and the C-3 Phase 2 Work Group. Similar to these groups, the ULWG has been working closely with the NAIC Life and Health Actuarial Task Force (LHATF) throughout the project.

A principle-based approach is one that reflects all the material risks, benefits and guarantees of the contract using basic principles of risk analysis and risk management. This approach is in contrast to the current "rule-based," formulaic approach that uses a single formula and a prescribed set of assumptions for all contracts in a given product grouping. Often times, a rule-based approach does not capture all of the risks of the contract, and may not adequately capture risk differences among contracts. Thus, modeling and/or stochastic approaches may need to be used to determine the appropriate reserve and capital requirement under a principle-based approach. However, a formulaic approach could be used if the underlying risks do not require a modeling or stochastic approach to properly capture the risks of the contract.

### Product Scope

We have decided to focus first on UL products with secondary guarantees because of the recent developments and discussions

regarding Actuarial Guideline 38, and because the risks, benefits and guarantees reflect the type of product that is best suited by a principle-based approach. VUL with GMDBs are also within our scope, but we will focus on this product once sufficient progress has been made on ULSG.

At the request of LHATF, we also added term products to our scope, since LHATF wants to maintain a “level playing field” in regard to reserve and capital requirements for term and ULSG products, and because of similarity in risks between ULSG and term products with long-term level premiums. (Note: while our product scope has been expanded to include products other than just UL products, the name of the work group continues to be the Universal Life Work Group.)

The principles we will be following to model the risks of ULSG are similar to those for VUL with GMDB. A key difference is that the value of universal life product guarantees are largely fixed-interest-rate-driven while for variable products the benefit value maybe sensitive to both interest rate and equity returns.

We believe the conclusions reached and methodologies used for these three products may be applied to other life insurance products as well. Thus, it may be appropriate to expand our scope beyond these three products at some future time, such as to whole life products.

### **Factors that Support a Stochastic-Based Methodology**

There are several compelling factors that indicate when a stochastic-based methodology is appropriate. A stochastic based approach will reflect tail risk and adequately quantify the value of guarantees to the policyholder under various future scenarios. A stochastic approach is appropriate when the likelihood of payment under a guarantee is

highly dependent on product design, policyholder behavior and external impacts/events in the market. A single formula cannot adequately capture/assess the tail risk and uncertainty of these types of products, as has been seen with the products subject to the proposed Actuarial Guideline VACARVM and C3 Phase 2 proposals.

For products with large tail risk and guarantees that may or may not apply in the future, a broad risk management focus is required. Because of the complexity of these products, and because results can vary dramatically depending on future events, applying formulaic valuation approaches on these products may provide either inadequate reserves or redundant reserves. A lesson learned from the VACARVM and C-3 Phase 2 projects is stochastic testing is required to adequately capture the risk profile of GMDBs. This type of valuation is necessary because the likelihood of the GMDB applying varies, depending on many parameters. In some cases, it does not apply, and in other cases it provides a significant policyholder benefit. This is why the principle-based stochastic modeling approach works; it adequately captures and quantifies the tail risk and the uncertainty of these guarantees.

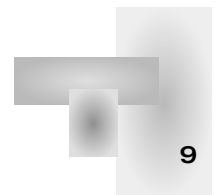
Because UL with secondary guarantees and VUL with GMDBs fall under the general category of products with tail risk and uncertain guarantee application, a stochastic modeling approach may be the best approach for these products. These products include several parameters, *e.g., credited interest rates, mortality charges and lapse experience*, that affect the value of the secondary guarantee to the policyholder, and therefore affect the risk to the company offering the guarantee. A stochastic modeling methodology using prudent best estimate assumptions provides a good framework for the valuation of the

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**A stochastic approach is appropriate when the likelihood of payment under a guarantee is highly dependent on product design...**

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risks to the company from the guarantees of these two products.

### Challenges

The development of a principle-based approach will be complex due to the characteristics of the life products with these types of risks and guarantees. We intend to address how interest rates, mortality and customer behavior affect the tail risk of these products. We also recognize that moving to a stochastic modeling methodology will require complex modeling tools that may be difficult to develop and maintain for some companies.

Another major challenge is the tax issue — both tax deductibility under Section 807 of the tax code, and MEC limits and definition of life insurance under Sections 7702 and 7702A. Since the approach we expect to recommend will likely not be a formulaic, seriatim approach, we recognize that the deductibility of the reserve for tax purposes is an issue that needs to be addressed. However, the AAA has formed a new tax work group to address these issues, so the ULWG will look to this tax group to take the lead on the tax issues (yet coordinate our efforts closely with them).

Since a principle-based approach will rely less on prescribed rules and assumptions and more on the professional judgment of the actuary to select methodologies and assumptions, a governance process is needed to assist regulators in assessing the appropriateness of the resulting reserve and capital requirement. This may include such things as imposing prescribed documentation and disclosure requirements, and/or requiring a peer review by an independent third party of the assumptions and methodologies used.

Finally, there is the issue of whether the changes, we are considering, moving to a principle-based approach, is best implemented by a change to the Standard Valuation Law, the creation of a new model regulation or the creation of a new actuarial guideline.

### Project Management and Organization

We now have over 40 members on the work group, representing about 30 different companies. Tom Kalmbach and I serve as co-chairs of the group. The AAA has established an e-mail list server under the name “ulwg” (contact Steve English of the AAA at [English@actuary.org](mailto:English@actuary.org) if you would like to be added to the list server as a member of the work group or as an interested party). We have been holding weekly conference calls since July, as well as monthly face-to-face meetings.

The first task of the ULWG was to develop a set of guiding principles. We then developed a high-level project plan and timeline, which included things such as the development of an overall methodology to calculate reserves, the selection of assumptions and how to model them, running models and conducting a thorough analysis of results. Our goal is to complete the analysis of the modeling results before the end of 2005, so that we can submit a proposal to LHATF on a new principle-based approach for the products in our scope at their December 2005 meeting. We plan to have our proposal far enough along so that LHATF would be comfortable in exposing the proposal for comments at that time, with a target effective date of Dec. 31, 2006.

We know that we have a huge task before us, so early on we concluded that we needed

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to split the work up into smaller work groups. We formed eight subgroups (teams) that have been meeting separately from the full group to address specific topics and issues. Each team is providing regular progress reports back to the full group. The successful completion of the project is highly dependent on work that is being done by these subgroups. The eight subgroups, with their chairs and a short description of their charge, are given below.

### Methodology Team

Chair: Randy Freitag

Charge: Discuss alternative modeling methodologies and provide a recommendation back to the full group giving the pros and cons of each.

### Product Team

Chair: Elinor Friedman

Charge: Define a generic product (policy features, etc.) for each product type in our scope that will be used for test modeling.

### Modeling Team

Chair: Jeff Vipond

Charge: Once the methodology, product features and assumptions are defined, build and run the models on various platforms and validate the results against each other. Also, develop a recommendation on the level of aggregation used in the modeling — granularity of grouping population by issue age, attained age, premium funding levels, etc.

### Mortality Assumption Team

Chair: Tom Kalmbach

Charge: Develop a recommendation on how to model mortality, including things such as future mortality improvement, old-age

mortality assumptions and whether to model mortality stochastically or deterministically.

### Policyholder Behavior Assumption Team

Chair: Peter Boyko

Charge: Develop a recommendation on all material assumptions related to policyholder behavior, such as lapse and premium funding assumptions.

### Expense Assumption Team

Chair: Tony Brantzeg

Charge: Develop a recommendation on how to model expenses.

### Asset Modeling Team

Chair: Gary Falde

Charge: Develop a recommendation on how to model asset cash flows, including the modeling of investment and disinvestment strategies. Develop a recommendation on the approach to generate interest rate and equity return scenarios.

### Reinsurance Team

Chair: Wayne Stuenkel

Charge: Develop a recommendation on how to model the impact of reinsurance and work closely with the Mortality Assumption Team. □



*David E. Neve, FSA, MAAA, is second vice president at Principal Financial Group in Des Moines, Iowa. He may be reached at [neve.dave@principal.com](mailto:neve.dave@principal.com).*