AMERICAN ACADEMY *of* ACTUARIES

Report of the American Academy of Actuaries' Annuity Capital Work Group

Presented to the National Association of Insurance Commissioners' Life Risk-Based Capital Working Group

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Annuity Capital Work Group

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Section 1. Background

The Annuity Capital Work Group (ACWG) was formed in October 2006 as a work group of the American Academy of Actuaries' Life Capital Adequacy Subcommittee (LCAS), drawing resources from LCAS and other Academy members. Its charge is to review and evaluate the interest rate and market risk (C3) component of the current Life Risk-Based Capital framework in the context of annuity products. The ACWG will work with the Life Capital Work Group (LCWG) and other Academy groups including the Life Reserves Work Group, the Annuity Reserves Work Group and the Variable Annuity Reserve Work Group and recommend changes to the Life Risk-Based Capital formula, as necessary.

With the scope of the ACWG and LCWG anticipated to include all life and annuity products and similar benefits, it is envisioned that the current factor-based approach for the C3 component for life and annuities, and the 50% floor of these factors implemented with C3 Phase I, will be replaced with the principles-based approaches being developed. Since it is ultimately desired by the LCAS to have one C3 framework that covers asset liability mismatch risk rather than the phases that currently exist, in addition to incorporating new products such as Equity Indexed Annuities, it is currently anticipated that the ACWG would also construct a universal methodology incorporating products and benefits previously included under C3 Phase I and C3 Phase II.

The scope of the work does not include a review of the other existing C-risk components.

Section 2. Working Construct

- Aggregate the results of running stochastic interest rate and / or equity return scenarios using prudent estimate assumptions (the more reliable the underlying data is, the smaller the need for margins for conservatism) and calibrated interest rate and / or equity return distribution functions.

- Calculate required capital for each scenario. For each scenario, accumulated statutory surplus is determined for each calendar year-end and its present value calculated. Statutory surplus is based on an estimate of current and projected reported values based on the statutory framework in effect at the valuation date. The lowest of these present values is tabulated and the scenarios are then sorted on this measure.

- A Conditional Tail Expectation (CTE) risk measure is used to set Total Asset Requirements (TAR). The C3 component of Risk-Based Capital is calculated as the difference between CTE 90 Total Asset Requirement and the CTE 65 Total Asset Requirement.

- An alternative method not involving stochastic projections may be permitted to establish TAR for some products.

- The C3 component is to be split between interest rate risk (C3a) and market risk (C3c).

- Risk-based Capital will have an additional adjustment for the difference between reserves and the CTE 65 Total Asset Requirement.

$$RBC = C0 + C4a + \sqrt{(C1o + C3a)^2 + (C1cs + C3c)^2 + C2^2 + C3b^2 + C4b^2} + (Reserves - CTE_{65}TAR)$$

  The concept of quantifying C3 as the difference between two CTE levels and making an adjustment to required capital as the difference between reserves and a CTE level (e.g., CTE 65), was presented to the Life Risk-Based Capital Working Group on December 9, 2006. Additional analysis is needed, but this is one item currently being evaluated.