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Universal Life Cont'd.

results consistent with results for otherwise similar fixed benefit fixed premium plans. Consistent results would imply that methodology is consistent with the Standard Valuation and Nonforfeiture Laws."

Although the Task Force noted that "the traditional reserve methodology in certain cases may cause short-term reserve inadequacy," it did not find requirements for additional reserves in these cases for fixed premium plans. Therefore, the Task Force recommendation was: "We believe that the appropriate place to address the general issue of cash value prefunding is not in the Universal Life Model Regulation, but in a regulation, guideline, or law applying to all types of life policies. Whether and how this can be accomplished is beyond the scope of our report."

Recently, regulators have become concerned about reserve adequacy of universal life, especially single premium universal life. What causes short-term deficiencies for universal life? Anything that increases the cash value quickly. The most common causes are short-term guarantees of current mortality and interest credits, the grading off of surrender charges, and the payment of persistency bonuses, e.g., returning mortality charges at the end of a given policy year.

Short-term deficiencies are not unique to universal life. They can occur on traditional whole life policies, for example, if cash values are graded from minimum to net level over a short period of time. They can also occur on graded premium whole life products that mimic term insurance in the early durations. For these policies the gross premiums in the early durations may be less than statutory mortality, but net premiums may be less than gross premiums when calculated on a present value to maturity basis. (Actuarial Guideline IV prohibits using long-term sufficiencies to offset short-term deficiencies for term insurance, but its scope says that it is applicable only to term life insurance without cash values.)

The regulators have attempted to deal with the issue of short-term deficiencies on a problem-by-problem basis. When the 1980 amendments to the SVL were adopted, the "modified premium whole life" version of deposit term was considered a valuation

problem—a special paragraph was added to Section IV of the SVL to require deposit term reserves to grade to the cash value at the end of the term period.

The committee developing the new valuation law, although focusing primarily on valuation actuary/cash-flow testing requirements, will have to deal with the issue of short-term deficiencies. However, it may be several years before a new valuation law is adopted. Meanwhile, we can expect to see several regulatory proposals to address specific concerns. A general solution would be one that directly requires reserves to be large enough so that there are not short-term deficiencies. Proposals to date have attempted either to address specific sources of short-term deficiencies or to eliminate sources of long-term sufficiencies. For example, the NAIC's Actuarial Task Force had proposed an extra reserve requirement for product guarantees more liberal than the minimum valuation basis. This proposal currently is on hold. The California Insurance Department is proposing to eliminate one source of long-term sufficiencies on universal life by requiring the valuation interest rate to be no larger than the interest rate guaranteed in the policy. The Indiana Department of Insurance has included the same requirement in a bulletin dated July 27, 1987.

It would be interesting to have some response to this article on the following:

1. Are reserves for short-term deficiencies currently required by the SVL? By standard actuarial practice?
2. How should such extra reserves be calculated? Should all products be covered?
3. May the valuation interest rate exceed a product's guaranteed interest rate? Note that this currently is accepted practice for annuities.

Responses to these questions may be sent to me at my *Yearbook* address. I will write a follow-up article for *The Actuary* if responses are sufficient.

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Recent Changes in Course 150 – (Actuarial Mathematics)

by Curtis E. Huntington

Candidates for an Associateship Examination were presented with written-answer questions (previously called essay questions) for the first time in more than 15 years last May. Labeled as an "experiment," the questions appeared on the Course 150 examination in Actuarial Mathematics (previously called the Part 4 examination in Life Contingencies).

Since the subject of contingency mathematics in the areas of life and health insurance, annuities, and pensions forms the foundation for most actuarial work, both students and members have expressed an interest in the background of this development.

Essay questions used to appear regularly on the Life Contingencies examination. Extensive analysis of the results on both the multiple-choice and the essay portions were performed by E&E Committee members. It was determined that final pass results based solely on the multiple-choice paper were not significantly changed when the essay results were added. Because of the sizable time commitment required from volunteers to create these twice-a-year examinations, the decision was made in 1971 to eliminate all essay questions from the Associateship examinations.

Since then, several things have changed. In 1984, the textbook for this subject was changed to the new *Actuarial Mathematics* text that uses a stochastic approach integrating life contingencies into a full risk theory framework. (Note: The new textbook has just been produced in a casebound edition and is available from the Society for \$65.) Second, calculators have been allowed. Third, a Flexible Education System (FES) has been implemented for the Associateship designation (formerly Parts 1 through 5). And, finally there has been a perceived significant deterioration in communication skills evident on Part 6, the first essay examination.

Along with these developments, several topics in Actuarial Mathematics do not lend themselves to being

Continued on page 9 column 1

Course 150 Changes Cont'd.

tested in a short multiple-choice format. Thus, the E&E Committee proposed, and the Education Policy Committee approved, the introduction of written-answer questions asking for a written solution onto Course 150.

In addition to allowing for in-depth testing of specific areas of knowledge, the E&E Committee leadership felt it desirable to have at least one Associateship examination contain some form of written answers.

Students were advised of the requirement of written-answer questions in a study note prior to the May 1987 examinations. The study note included eight sample questions and solutions. The questions selected were written by the Examination Committee at the same time the examination was being set. Students were informed that the solutions were illustrations of answers expected of a well-prepared student and that other solutions might receive full or partial credit.

The May 1987 examination contained six written-answer questions, and candidates were allowed 1 1/2 hours to answer them. The questions and model solutions are contained in study note 150-132-87, currently available from the Society.

Was the experiment a success? Course 150 Chairperson, Jeffrey Beckley said, "Yes and no." Yes, because the new material supplied the Examination Committee with additional information, including the fact that the multiple-choice and written-answer sections were not as highly correlated as they had been in prior years. No, because students performed relatively poorly on the written-answer questions.

Many students turned in blank pages for more than one question, either indicating a lack of knowledge of some subjects or an inability to properly allocate time among the several questions. Furthermore, many students who did answer questions did not follow the format and structure shown in the sample answers.

One question on the May examination involved a changed mortality rate at one particular age. Students were given a formula for the 20th year terminal reserve and asked to show that it was a correct formula reflecting the changed value. According to Beckley, even though the answer was given and the solution merely required a development of that answer, the

modal score earned on that question was zero, and the mean was less than 0.3 out of 5 points.

Although results were disappointing, the E&E Committee has decided to continue with written-answer questions on Course 150. The Committee will continue to evaluate performance of candidates on the two pieces of the examination and will consider imposing minimum standards sometime in the future if the performance on the written-answer section does not improve.

Students preparing for the November 1987 examination are urged to carefully review the model solutions provided in the study notes. In addition, students may find it helpful to read "Techniques for Preparing for and Writing Exams" which appears in RSA 11, No. 3 on pages 1291-1321.

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Single-Premium Whole Life Insurance

by Gary E. Dahlman

Another old but little-used product is making a comeback. Single-premium whole life insurance (SPWL), with minimal death benefits and current market interest credits, is being sold in considerable volume, particularly in the securities brokerage market. Many general agency and brokerage life insurers have also introduced SPWL products recently.

SPWL sales have accelerated rapidly since the passage of the Tax Reform Act of 1986. While the Tax Act eliminated or significantly reduced the attractiveness of many past popular tax shelters, life insurance was left relatively untouched.

Both fixed (book value cash outs) and variable products are being sold. Sales of SPWL can build a company's assets rapidly, but note also that fixed products retain the disintermediation risk. For this reason we may see a shift to variable products over the next few years.

Background

During the mid-1970s, the sale of single premium deferred annuities

SPWL Cont'd.

with current market interest credits increased dramatically. These sales were fueled by the high interest rate environment and the tax deferral aspects of deferred annuities. Small amounts of SPWL were sold in the late 1970s and early 1980s; however, the lack of a definition of life insurance in the federal tax code discouraged the securities houses from marketing SPWL with a heavy investment orientation.

The situation changed considerably with the passage of TEFRA and DEFRA. Not only was a definition of life insurance added to the tax code which spelled out minimum death benefit requirements for a contract to qualify as life insurance, but changes were also made to the taxation of annuities which increased the attractiveness of SPWL. As a result, brokerage firms and insurance companies began actively developing and marketing SPWL plans, and sales have soared in the past few years.

Product Description

While a few years ago the most common SPWL contracts were traditional SPWL plans with excess interest credits used to purchase paid-up additions, the use of single premium universal life (SPUL) contracts is widespread today. Many of the SPUL contracts in the marketplace have zero current mortality charges (often guaranteed for up to five years).

A popular variation of SPWL is an SPUL contract which makes no specific provision for mortality deductions. The contract's single premium is accumulated with interest only, or with interest less an expense charge. The interest spread is typically wider (i.e., the credited rate is lower) on such contracts since mortality costs must be covered by the interest spread in the absence of a separate mortality charge deduction.

Common to all investment-oriented SPWL contracts are minimal death benefits, which are specified in Section 7702 of the federal tax code, and maximum cash value accumulations.

Most contracts contain no front-end load. Instead, there is a rear-end surrender charge (typically 7-8% initially, grading uniformly to zero after 7-8 years), but with a "money back" provision which provides that

Continued on page 10 column 1