



SOCIETY OF ACTUARIES

Article from:

# The Actuary

October 1992 – Volume 26, No. 08

# Annuities structured for safety

by Felix Schirripa

**B**asing the purchase of a group annuity contract solely on the current financial strength of an insurance company could be a costly mistake. Strong financials are necessary, but they are not enough to guarantee permanent security to participants. In addition, buyers need to evaluate the contract's structure and the insurer's ability to manage assets over a long period.

Whatever the reason for the purchase — economic value, settlement gain, asset reversion, or plan termination — annuity (i.e., closeout) contracts are permanent and irrevocable commitments. From this perspective, buying an annuity contract could be one of the most important fiduciary decisions defined benefit plan sponsors face.

So what is an annuity buyer to do? How can sponsors be assured that the contract they buy today will make annuity payments 50 years from now? Does the market offer a "bulletproof" annuity contract at an affordable price?

**Modern designs emphasize security**  
Insurance companies are responding to these concerns by developing innovative participating (par) annuity structures that emphasize permanent security. In addition, some new contracts could reduce the true cost of annuitization and so benefit the sponsor and the participant.

Compared to conventional nonparticipating annuities, the new designs often require an extra premium. The extra up-front cost could range from 5-10% of the corresponding nonpar annuity premium. (As long as the extra premium falls below 10%, the contract should qualify for settlement treatment.) In exchange for the extra premium, however, the sponsor shares in favorable investment and actuarial experience.

As a result, par contracts should not be purchased using premium information alone. Favorable investment, early retirement, and mortality experience can, in some cases, reduce the ultimate cost below the premium charged for nonpar contracts. On the other hand, the

insurer absorbs catastrophic downside risks — mortality breakthroughs, early retirement, and investment losses — so additional premium payments are never required.

**How modern annuity designs work**  
Designs vary from company to company, but most modern par contracts have some features in common. The more important elements are:

- **Separate account structure** — Contracts funded using separate accounts can normally be "walled off" from the claims of general account creditors in the event of insolvency. For example, New York Insurance Law Sections 4240(a)(12) and 7435(b) provide immunity from claims of other creditors. (In New Jersey, this was the result for Mutual Benefit's separate accounts.) Therefore, participants and the plan sponsor are assured that assets will be available to make benefit payments. The separate account structure creates a "bulletproof" annuity contract by eliminating the general account risk.

- **Investment flexibility/constraints** — High quality assets and tight duration matching between assets and liabilities are critical to the long-term success of these products. The value of using the separate account structure would be lost if there is too much investment flexibility. For example, a separate account invested in speculative assets provides little comfort to the buyer. On the other hand, removing all forms of investment discretion reduces the insurer's opportunity to add value by actively managing the portfolio.

A proper balance is needed. Restricting asset quality to investment grade and limiting asset/liability duration mismatches to within one-half year would be reasonable.

- **Visible operation** — The operation of the contract and separate account should be visible to the buyer. Fees, risk and profit margins, actuarial assumptions, and calculation of dividends should be revealed to the client. There is little reason to accept less than full disclosure (as is typically the case with nonpar contracts).

Until recently, these new separate account annuity structures had been available only to clients who were willing to commit to \$100 million contracts. At least one insurance company now is offering a pooled product that achieves economies of scale for a minimum of \$10 million per contract.

If the sponsor chooses a pooled separate account annuity contract, complete disclosure also would require an explanation of how investment results are shared. Further, each contract should be self-supporting, i.e., underwriting gains and losses should not be shared with other contracts. It would be inappropriate for one contract to subsidize another.

Buying a par annuity contract does not require special governmental approval. The decision to purchase conventional nonpar versus modern par is left to the buyer. In fact, the instructions to PBGC Form 500 (filing instructions for standard plan terminations) contemplate the use of par annuity designs. Participating contracts may be used to satisfy plan obligations if:

- The guarantee of benefits is unconditional, irrevocable, and non-cancellable
- Unfavorable investment, early retirement, and mortality experience do not decrease amounts paid to participants
- For contributory plans, participant contributions are not used to pay for the participation feature (i.e., residual assets must be allocated using the price of the equivalent nonpar contract)

## Conclusions

The modern par contracts can help simplify the difficult fiduciary decision that sponsors face when they buy annuities. Besides the added security to participants, par contracts have the potential to lower the true cost of annuities and so are an important vehicle for the plan sponsor community.

Of course, these new annuity arrangements are not a panacea. Plan sponsors still should evaluate the insurer's financial strength, commitment to the business, and

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### Annuities cont'd

ability to manage assets and liabilities. Face-to-face meetings are the best way for plan sponsors to evaluate an insurer's capabilities and commitment to this line of business.

Felix Schirripa is vice president, Metropolitan Life Insurance Company.

### TSA cont'd

tax laws and statutory requirements that tend to push statutory liabilities and tax basis liabilities further apart.

Planning activities that bring tax basis liabilities and statutory liabilities closer often are valuable tools. Many companies would find certain tax planning activities desirable except for the statutory surplus strain that such activities often cause. This paper attempts to provide a means of evaluating those strategies for both stock and mutual life insurance companies under current law by computing an internal rate of return to measure their value. It provides guidance in computing a standard against which to measure that rate of return.

#### "A Practical Algorithm for Approximating the Probability of Ruin" by Colin M. Ramsay

A simple and practical algorithm for approximating the probability of ruin is developed. The approximation has an attractive feature in that it uses only the first four sample moments of the claim size distribution and the premium loading factor. The key concept is to fit a second order mixed exponential or a gamma distribution to the pdf  $(1-P(x))/p_1$  where  $P(x)$  is the claim size cdf and  $p_1$  is the mean claim size. This approximation is compared to exact results and to the Cramer-Lundberg, Beekman-Bowers, and de Vylder approximations. Its accuracy generally is equal to that of the Cramer-Lundberg approximation and superior to the other two.

### In memoriam

George Y. Cherlin FSA 1955,  
ACAS 1961, MAAA 1965,  
FCA 1982, EA 1976

Maurice E. Comfort FSA 1948,  
FCIA 1965

Roderick Fraser-Petherbridge  
ASA 1950, FIA

### E&E developments cont'd

where there are few candidates.

Recently, the Society retained a consultant from the Rand Corporation who is an expert in professional education. He has had experience with many other professional organizations. His recently completed report includes several valuable ideas that we will pursue in areas such as examination construction and validation of pass-mark requirements.

The system will continue to be driven by the very valued efforts of E&E committee volunteers. At the same time, we will rely more on full-time Society staff, including an education professional and four FSAs. We will find the right mix of resources to maintain the E&E system as one of the finest professional educational systems in North America and as one of the key strengths of our profession.

Bruce Moore is Vice-General Chairperson of the Education and Examination Committee, Chairperson of the Investment/Financial Task Force, and senior vice president and chief financial officer, Prudential Insurance Company of America.

### New E-Mail directory

William S. Jewell at the University of California in Berkeley is organizing an Electronic Mail (E-Mail) directory "to improve communication and encourage collaboration across the insurance research community." Using the chain letter approach, he has collected almost 80 E-Mail correspondents' names, affiliations, and addresses from 19 countries, mostly academics, using Internet, Bitnet, or their national equivalents.

Jewell asks that if you are part of the actuarial science, insurance mathematics or economics, risk theory, or similar community and want to participate, please send an EMAX to him at: <wsj@euler.Berkeley.edu>. Please give your full name, academic or business affiliation, address, and the external form of your E-Mail address. He especially encourages participation from governmental bureaus, research institutes, and insurance companies that are using commercial networks.

## Dear Editor:

### Head of Georgia State program protests withheld exams

In October 1985, the Society of Actuaries announced the implementation of a forward-thinking, but long overdue, policy on the distribution of "all multiple choice examinations" to its students. While this promise never was truly fulfilled (only four of more than 30 Course 100 and 110 exams for 1986-1991 have been released), it nevertheless provided an educational benefit of inestimable proportions to higher-level actuarial students during the six-year period.

With no prior notice, the Society withheld distribution of its November 1991 examinations. Indications are that such a policy is being continued in 1992. On behalf of many actuarial students sorely disappointed with that policy, I would like to register a strong protest.

In the academic world, especially at the undergraduate level, students often perceive that an antagonistic, competitive relationship exists between themselves and their instructors. Effective teachers work diligently to show their students that they share the ultimate goals of learning and thorough understanding. This antagonistic relationship seems to have existed for years, at or just below the surface, between the Society of Actuaries and its students. This previously was largely because of the secrecy of the examinations and the sense that the correlation between textbooks and other study materials and the exams themselves was not as high as it should have been. For six years, the Society eliminated the source of this criticism by publishing the exams.

The students' reaction to the recent change is predictable. Many students believe that examiners simply are unwilling to construct new tests with each exam administration. Exacerbating the effects of the policy change is the Society's attempt to implement a "gag rule," by which candidates are coerced into vowing not to discuss the examination with anyone, even after all the exams have been completed. This rule seems not only to be of dubious legality, but also is certain to increase antagonism toward the Society. Further, such a "gag rule" is certain to be ignored by many students.