



SOCIETY OF ACTUARIES

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*Continuing Education cont'd.*

certain areas of specialization after completing required amounts of continuing education. Florida has a similar law in which a lawyer publicly designates up to three areas of specialization based on experience; to maintain the area(s) of specialization, the lawyer must participate in prescribed amounts of continuing education.

Certified public accountants are required to take an average of forty hours of annual continuing professional education in forty-five states. Much of the course material developed to meet this requirement is produced by [AICPA]. Assuming, on the other hand, that the profession desires to challenge the status quo by recommending the formalization of continuing education for the profession, a series of questions must be addressed. These include, but are not necessarily limited to, the following:

- (1) Should a program of continuing education for actuaries be voluntary or mandatory?
- (2) What would be satisfactory components of continuing education? Would we adopt a classroom instruction hour requirement, or a more flexible approach which gives credit for activity within the profession (such as membership on committees, giving lectures, writing articles in bulletins or professional journals, authorship of monographs or books, and so on)? In either case, how many hours (or how many units) would be required?
- (3) What kind of activities currently undertaken by the actuarial organizations would qualify for continuing education credit? The Enrolled Actuaries Meeting, the CLRS, or other seminars sponsored by other organizations would have to be considered.
- (4) Should certification of satisfactory completion of the requisite hours of instruction/study/activity be on a self-certification basis, or should the various actuarial organizations undertake this function?
- (5) In any continuing education program, whether mandatory or voluntary, some type of review process must exist to ensure the quality of the program. This review process should address both the quality and appropriateness of the course offerings, as well as the length or duration, in order that some form of a quantitative measure might be applied such as hours, points, or continuing education units (CEUs).

(6) Should the profession adopt a program of recertification of its members, based upon successful completion of x hours of continuing education in y number of years? Should the *Yearbooks* denote members who have successfully completed their continuing educational requirements?

(7) How does the issue of qualification standards interrelate with a continuing education program, and what implications does this relationship have with respect to the profession's educational programming?

(8) A major communications program directed to members of the actuarial profession would be critical. Clearly, some communications are needed to establish the necessary membership support that such a program would require. Even if the program is without any onerous certification or testing requirements, the members must be advised as to the nature of the program to be adopted.

### Conclusion

This article has provided an analysis of what continuing education means within the context of professional organizations. There is little need to reinvent the wheel regarding this issue, given the experience of others. The actuarial profession, if it does determine to move down a road towards formalization of continuing education requirements, needs to consider the lessons learned by others if it is to produce a program which meets the needs of its members and the public interest.

Gary D. Simms, Esq., not a member of the Society, is General Counsel for the American Academy of Actuaries.

### TSA Papers Accepted

The following papers have been accepted for publication in *TSA* Volume 40:

- "Probabilistic Concepts in Measurement of Asset Adequacy," and "Unification of Pricing, Valuation and Management Basis Financials for Participating and Non-Guaranteed Element Contracts," by Donald D. Cody.
- "Some Applications of Credibility Theory to Group Insurance," by Charles S. Fuhrer.
- "Interest Rate Scenarios," by Merlin F. Jetton.

## Product Profitability: Variable Versus Interest-Sensitive

(Part Two of Two Parts)

by John M. Fenton and Dennis L. Carr

This is the second part of a two-part article examining some of the pricing-related issues insurers face in deciding whether to introduce a variable life insurance product. Part one appeared in *The Actuary* for March 1988.

### Recap of Results from Part One

In part one, it was shown that (under the given set of assumptions) a hypothetical company can generate comparable profitability on a typical Variable Universal Life (VUL) product, as compared to its current Universal Life (UL) product. Initial testing was performed using a single cell approach under a level interest rate scenario. The resulting VUL product is somewhat more heavily loaded than the UL product to compensate for the higher expenses generally found on variable products. Profitability was compared after provision for taxes and target surplus. Because of the reduced exposure to interest rate risks, a lower level of target surplus was assumed for the VUL product, aiding its profitability.

Here, in part two, two more topics will be addressed:

- Global pricing issues
- Impact of multiple interest rate scenario testing on profitability

### Global Pricing Issues

Our initial analysis focused only on a single cell approach to pricing. This approach necessarily converts fixed amount start-up expenses into per policy expense assumptions, utilizing expected production figures. However, a new pricing technique gaining more acceptance in the industry conducts profit tests under various production levels. Each production level generates a separate per policy expense assumption. Although it may be difficult to estimate both the level of future production and the allocation of expenses between fixed and variable, this global approach offers advantages. This concept is especially important on variable products because of their

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*Product Profitability cont'd.*

generally higher start-up expenses. These higher expenses can be composed of several factors, including:

- Higher costs to purchase, develop, or lease systems which are capable of administering variable products;
- The need to incorporate SEC related product development costs, such as the legal fees involved in preparing a variable product prospectus or those for registering separate accounts, if necessary;
- Costs to train and license an agent sales force;
- Initial excess fund operating expenses that the insurer may have agreed to absorb directly.

Although beyond the scope of this article, it would be desirable to study the impact of varying production levels on per policy expense assumptions.

**Multiple Interest Rate Scenarios**

Until fairly recently, profit testing on most life insurance products was conducted on a book value basis, utilizing a level interest rate assumption. However, with the continued popularity of interest-sensitive products, the industry is realizing the need to examine these products' exposure to interest rates changes. In particular, pricing is no longer solely viewed in the context of projecting liabilities. Rather, pricing actuaries also need to consider the impact of interest rate changes on assets purchased to back these products.

In this regard, profit testing of the two products was expanded to study the impact of varying interest rates on profitability. Profit tests were conducted under 40 randomly generated interest rate scenarios. For this round of testing, the following assumptions were made:

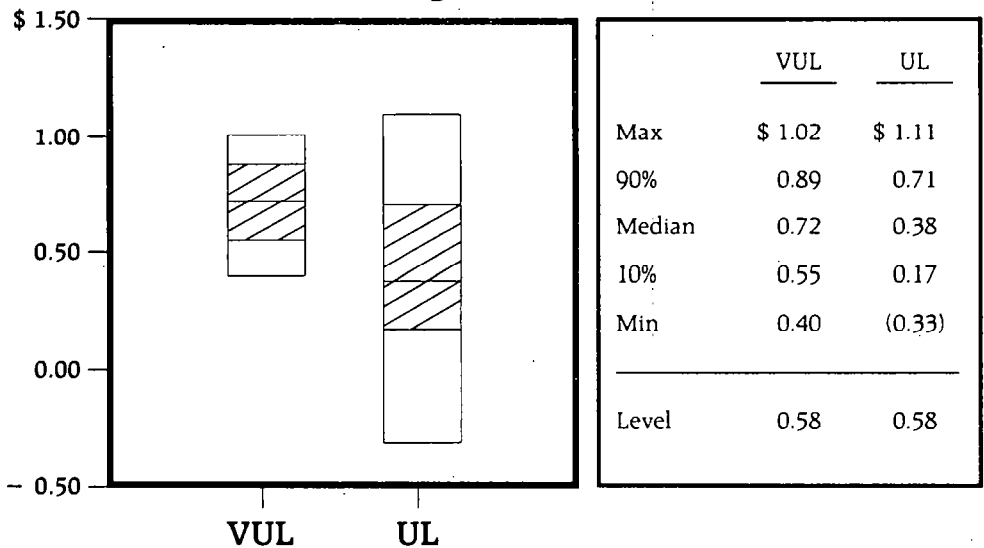
- Assets backing the UL product were invested in ten year high grade corporate bonds.
- The credited rate on the UL product was set equal to the earned investment rate less 150 basis points. In no event, however, did the credited rate exceed the competitors' credited rate by more than 25 basis points.
- The competitors' credited rate is an index representing the expected credited rates for similar UL products. It was expressed as a function of five-year Treasury bonds to reproduce actual recent UL credited rate experience.

- When the UL product's credited rate fell below the competitors' credited rate, additional lapses were assumed to occur. The amount of additional lapses varied depending on the magnitude of the difference in credited rates and the level of surrender charges.
- Monies placed in the VUL product were assumed to be invested in the money market fund. Although this simplified assumption was made to eliminate the need for market value adjustments on liabilities, results should not be unreasonable compared to other investment vehicles.
- Interest rate changes did not generate excess lapses on the variable product. It was assumed that instead of lapsing, monies would be moved to other available funds if a particular fund's investment performance was poor.

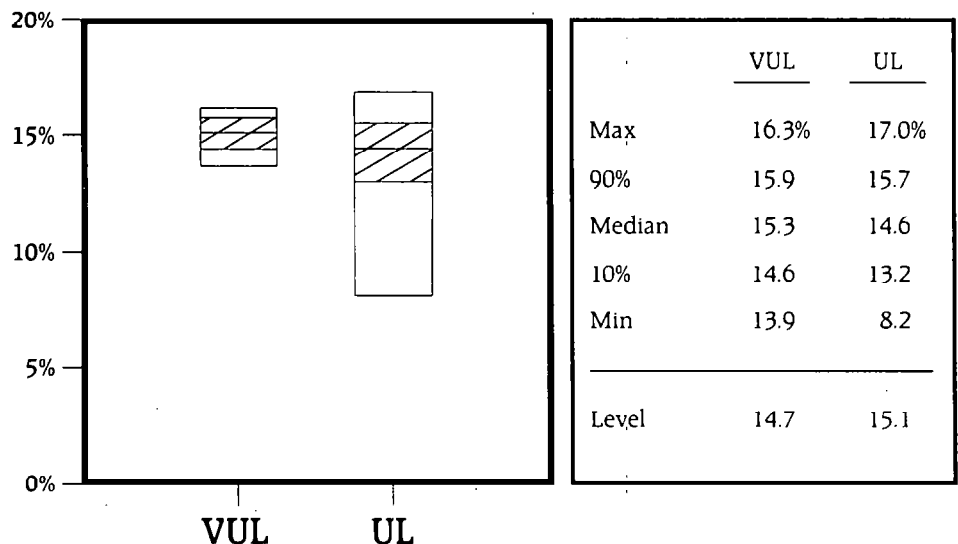
Based on these assumptions, profit results on the two products were measured after provision for taxes and target surplus. Profits were discounted at a level 12% interest rate. Results are shown here in graphic format. The shaded area in the bar graph represents results between the 10th and the 90th percentiles. The maximum value (Max) represents the

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**Comparison of Profit Results  
Present Value per Unit — 12% Discount**



**Comparison of Profit Results  
Return on Investment**



*Product Profitability cont'd.*

most favorable profit test result, while the minimum result (Min) represents the least favorable result. Profits under the level interest rate scenario also are provided here for comparison.

The multiple scenario results reveal that profits on the VUL product are much less volatile than the UL product. One should note that on the VUL product the median result under multiple scenarios is more favorable than the level interest rate result. However, the opposite is true on the UL product. The UL product's profitability is more volatile primarily because of additional lapses, which result when the UL product's credited rate falls below the competitors' credited rate. In fact, these additional lapses create a significant difference between the two products in the amount of business that is in-force in later years. While the VUL product has about 28% of its business in-force after 20 years, the comparable median result for the UL product is only 8%.

**Conclusion**

It appears that a company considering a variable product can develop a typical VUL product with adequate profitability, as compared to the company's current UL product. In fact, profit results under multiple interest rate scenarios suggest that earnings on the UL product are subject to larger swings due to interest rate changes. In the end, however, profitability will depend on many factors, including the amount of additional expenses incurred on the variable product, actual production levels, ability of the company's distribution force to sell the VUL product, and the impact of interest rate changes on lapse rates.

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Dennis L. Carr is a Consulting Actuary at Tillinghast/Towers Perrin. He was a faculty member for the SOA Seminar on a Multiple Scenario Approach to Interest-Sensitive Product Development in the fall of 1987.

**In Memoriam**

Robert D. Drisko F.S.A. 1958

Joseph B. Glenn F.S.A. 1931

Henry S. Huntington III F.S.A. 1951

Bennet B. Murdock A.S.A. 1942

**Editorial**

# Opportunities in Restructuring

by Richard K. Kischuk

**R**estructuring has been a way of life for most industries in the 1980s, including life insurance. This is creating tremendous opportunities for the actuarial profession, if we choose to capitalize on them.

For most of the twentieth century, whole life insurance has been the bread-and-butter product for the industry. This began to change in the 1940s as insurers diversified into employee benefits. More recently, sales have shifted toward term insurance, variable products and interest-sensitive products. Insurers have begun to offer managed health care services, and many have diversified into banking, property-casualty insurance, securities brokerage, mutual funds and other financial services.

As Exhibit 1 shows, these trends have intensified during the 1980s. From 1981 through 1986, life insurance products provided \$16 billion of surplus. Most of this surplus was reinvested to support the growth of annuities, which consumed more than \$14 billion of capital. Overall, the industry has experienced a tremendous shift of capital from whole life insurance to term insurance and interest-sensitive products. Life insurers have also made huge investments in managed health care, variable products and other types of financial services.

Traditionally, profits from ordinary life insurance, the backbone of the industry, have not only provided most of the dividends to policyholders and shareholders but have also financed the industry's diversification into other areas. However, as Exhibit 2 illustrates, capital generated by ordinary life insurance appears to have peaked in 1983. This has been caused by a fundamental decline in profit margins from ordinary life insurance (see Exhibit 3). Profitability has fallen off sharply as lapse rates have risen and sales have shifted from whole life to term insurance and interest-sensitive products. AIDS claims will erode the capital still further.

This trend has probably not been obvious to many companies because it was more than offset by health insurance profits in 1984 and 1985, along with capital gains in 1985 and 1986. Of course, these are both cyclical sources of profit, and they do not provide a permanent offset to the erosion of ordinary life profitability.

Increasingly, chief executive officers are realizing that they have little time to create a new underpinning of profits to replace the earnings from traditional whole life products. Unfortunately, returns from most of the newer activities — variable products, interest-sensitive products, managed health care and financial services — have not met expectations.

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EXHIBIT 1  
Vitality Surplus Generated

