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VUL Secondary Guarantees:

Catalyst for Sales Rebound

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The extended bear equity market has driven down sales of VUL and caused potential buyers to desire downside protection. The UL market with its lifetime guarantees based on very aggressive premium levels has set the standard for this downside protection. Distributors, and to a lesser extent buyers, focus on UL required premium levels more than the required premium level of other VUL products with lifetime guarantees.

In addition to the aggressive UL required premium levels, developers of VUL secondary guarantees must overcome conservative reserving requirements, the absence of viable reinsurance options and the negative perception of senior management due to the losses experienced by many carriers on variable annuity guarantees. The incidence of risk under VUL death benefit guarantees is much different and smaller than guarantees contained in variable annuities. These challenges may cause the optimum path to be one of including a "UL Lifetime Guarantee" within a VUL Product.

Reserves:

Reserves for this guarantee provide for death benefits that exceed those which exist in the absence of the secondary guarantee. The reserve methodology is contained in the Variable Life Model Regulation and is clarified in Actuarial Guideline XXXVII (AG 37). AG 37 enables consistent reserve treatment of VUL guarantees even though the earlier version of the model regulation (which is the only version approved in many states) did not anticipate current types of long-term VUL guarantees.

The reserve is the greater of (1) the one-year term reserve (OYT) and (2) the attained age level reserve (AAL). The OYT reserve is designed to cover extreme circumstances that could occur prior to the next annual statement. The AAL reserve provides for the full risk period but is designed to build and decrease slowly through periods of poor and favorable investment experience, respectively.

The OYT reserve essentially is equal to the total term cost for up to one year that is not covered by a "reduced" account value. The "reduced" account value is equal to the valuation date account value after the separate account portion is reduced by one third.

The AAL reserve equals the "residue" of the prior year's AAL reserve increased by a defined payment (which can be positive or negative). The "residue" is the prior year's AAL reserve adjusted with persistency and interest and reduced by tabular claims due to the guarantee. The defined payment equals (A) the present value of projected future guaranteed minimum death benefits less (B) present value of projected future death benefits in the absence of the guarantee less (C) the "residue" divided by a level annuity factor for the guaranteed period.

AG 37 clarified the following calculation details:

- Secondary guarantee must be assumed to remain in force if contractually possible.
- Projections and discounting are based on valuation mortality and interest and ignore product loads.
- XXX select factors do not apply.
- In the calculation of AAL, at all points during the guarantee period the quantity (A)-(B) is floored at zero.

Competitive Overview:

The death benefit guarantees currently offered under VUL products can most logically be separated by the length of the guarantee period. Most VUL contracts offer a short-term benefit and may also offer an intermediate term or a lifetime guarantee or both. Short-term benefits provide a three- to 10-year guarantee. They essentially enable a lower minimum premium by deferring the need for a positive surrender value. Intermediate term benefits usually provide a guarantee to "retirement" (i.e. until the later of age 65 or 70 and 20 years). The "best" intermediate term designs usually require payment of the commissionable premium. Lifetime guarantees are currently gaining most attention, but have very high required premiums.

The death benefit guarantees can also be separated by the methodology for measuring "required premiums." The Cumulative Premiums Method requires that the sum of premiums paid less partial withdrawals less outstanding debt exceeds the sum of required monthly premiums since issue. With the Interest-Adjusted Premiums Method, premiums and withdrawals are adjusted with an interest factor from point of payment before comparison to the required monthly premium adjusted with interest from the assumed due dates. The third and far less common method requires a positive shadow account value based on actual premiums, withdrawals, debt and assumed return and charges. All three of these methods may be utilized with or without a catch-up provision. Without catch-up, the premium requirement (or a positive shadow account value) must be met on each processing date (or sometimes annually).

If it is deficient, a lapse notice is sent indicating that the guaranteed benefit will be lost if the required premiums are not paid. With catch-up, the owner is only required to have paid sufficient premiums at the point the surrender value is negative and the contract would lapse without the secondary guarantee. A grace period is allowed for paying sufficient premium to cause a positive surrender value or to meet required premiums.

Recently two companies have added secondary guarantees maintained solely or primarily based on "premiums" allocated to the fixed account. This essentially creates a UL with a secondary guarantee and a tax-advantaged side fund. The required premiums for the first of these two products are competitive with UL products (we have not yet seen required premiums for the second product). At a competitive UL premium level (30 percent to 40 percent of a guideline annual premium for super preferred), significant additional premiums can be paid and allocated to generate retirement income or to increase corridor death benefits.

Figure 1 provides a sampling of required premiums for lifetime VUL death benefit guarantees. The majority of these benefits have required premiums greater than 85 percent of a guideline annual premium. One of the products has required premiums in the range of 65 percent to 70 percent of the guideline annual premium. Even at this lower level, it is significantly higher than some UL guarantees.

Benefit Cost Analysis:

With some stochastic cost analysis, the required premium levels shown in Figure 1 can be logically explained. For our modeling, we captured the following key benefit cash flows on a stand-alone basis.

- PV of the change in year by year secondary guarantee reserves
- PV of foregone monthly deductions due to investment return scenarios which totally dissipated account values
- PV of benefit specific charges ($0.01 per month per $1,000 of a specified amount in our case)

We discounted all cash flows at 12 percent interest and expressed all PVs as an amount per $1,000 of an initial specified amount. Our analysis only reflects standard contract lapse and does not attempt to add benefit lapse or adjust contract lapse dynamically based on investment returns in each stochastic scenario.

For our modeling we created a generic death-benefit-oriented VUL for a male

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With catch-up, the owner is only required to have paid sufficient premiums at the point the surrender value is negative...

preferred non smoker with issue age 55. For a $500,000 specified amount, Death Benefit Option 1 and a gross return of 9.00 percent, our current assumption level premium to carry to age 100 is $5,855.

In our model, investment returns were randomly generated based on the independent lognormal distribution. The baseline analysis assumes a mean return of 10 percent and a 15 percent standard deviation. Initially 1000 scenarios were run. The results were then ordered (lowest cost to highest). Then every fourth scenario was extracted for use on all other runs (250 scenarios).

Figure 2 displays our cost and revenue components at the following three different premium levels.

- $16,813 (95 percent of the guideline annual premium)
- $15,044 (85 percent of the guideline annual premium)
- $13,274 (75 percent of the guideline annual premium)

These mean results clearly show that the reserve cash flows dominate the cost and greatly increase as the required premium drops below 85 percent of the guideline annual premium. At this mean and variance we did not generate any scenarios where the account value was fully liquidated. Figures 3 and 4 display the distribution of net costs for both 85 percent of GAP and 75 percent of GAP respectively.

Next we looked at sensitivity testing of the mean and standard deviation of the investment return by utilizing the following two combinations and 85 percent of GAP.

- Mean 10 percent/Standard deviation 20 percent
- Mean 6.5 percent/Standard deviation 15 percent

The results from these distributions are shown in Figure 5. The reserve costs increase somewhat, but the incidence of totally dissipating the account value stays at or close to zero. These limited results support a required premium of roughly 85 percent of GAP if the full statutory reserve effect is reflected. If nonstatutory measures are used to set the profit goals or if some mechanism is employed to utilize reserves closer to the economic cost, then lower required premiums can be justified.

Effect of 2001 CSO:

Since the XXX select factors do not apply to this benefit, the lower mortality rates contained in the 2001 CSO Table help considerably. This can be viewed in Figure 6, which compares the reserve costs at several required premium levels.

Other Considerations:

Financial reinsurance with a methodology similar to that utilized for UL secondary guarantees would lower costs considerably. Reinsurance on this basis is essentially not available. Reinsurers are unwilling to spend limited capital on an agreement that yields minimal incremental revenue. In addition, losses on annuity guarantees are causing many reinsurers to avoid the equity guarantee market. Companies may have more luck piggybacking their UL deals with a "UL lifetime guarantee" within a VUL.

Another possible cloud on the horizon is the proposed C-3 changes which would require risk capital based on stochastic modeling at the modified CTE 90 level. The modified CTE 90 level is the arithmetic average of the worst 10 percent of all scenarios, with no scenario being calculated as a positive value of accumulated surplus. Current reserves for a lifetime benefit with a required premium at 85 percent of GAP probably exceed this level.

Conclusions:

The "UL lifetime guarantee" within a VUL may be an easier path for financial reinsurance and more in sync with buyers' risk tolerances at the tail of a bear market. Alternatively, early use of the 2001 CSO Table for death-benefit-oriented VUL should generate positive results. □

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Sample Required Premiums (Lifetime Benefit)
Face Amount = $500,000 – Best Class – Male NS – DB Option 1

Company/Product	Issue Age 45	Issue Age 55	Issue Age 65
Comp. A/Accum.	$10,129	$16,192	$25,765
Comp. A/DB	$9,215	$15,069	$24,659
Comp. B	$9,985	$16,635	$29,495
Comp. C/Accum.	$10,432	$16,896	$28,421
Comp. C/DB	$10,020	$16,325	$27,750
Comp. D/DB	$6,324	$10,160	$17,486
Comp. E	$8,790	$14,600	$24,365

Figure 1

BENEFIT COST ANALYSIS (1980 CSO)
Required Premium Level – Mean Costs – Issue Age 55

Premium Level	PV of Reserve	PV of Foregone Changes	PV of Revenue	Net PV
95% of GAP	$0.05	$0.00	$0.61	-$0.56
85% of GAP	$3.56	$0.00	$0.61	$2.95
85% of GAP	$13.92	$0.00	$0.61	$13.31

Figure 2

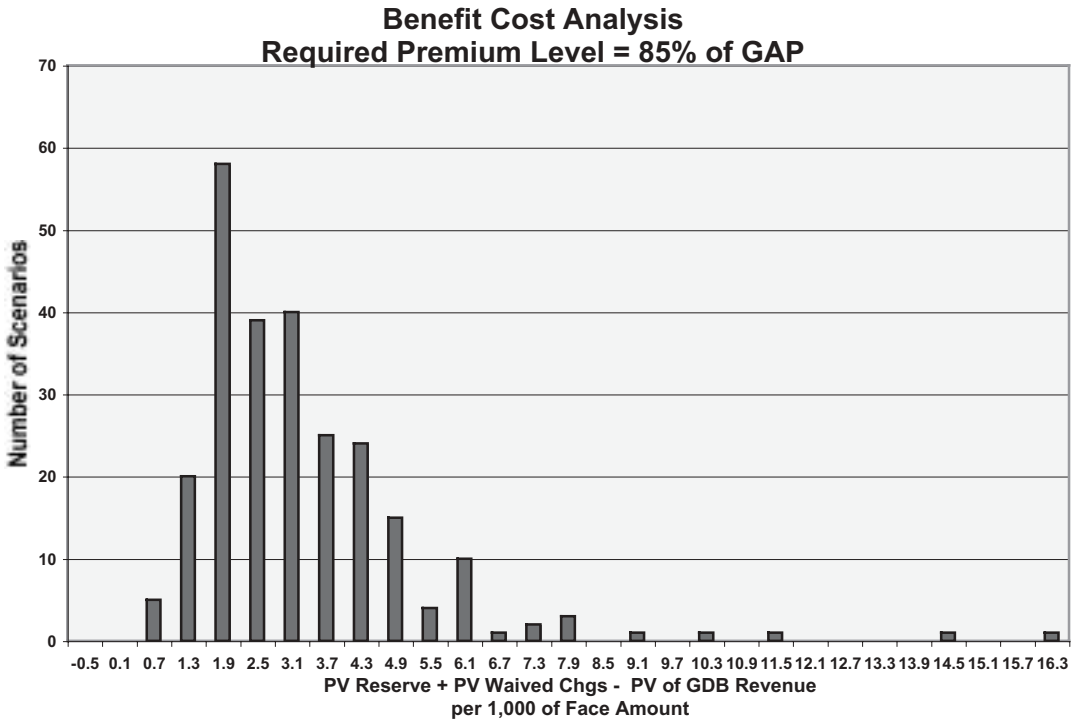

Figure 3

Figure 4

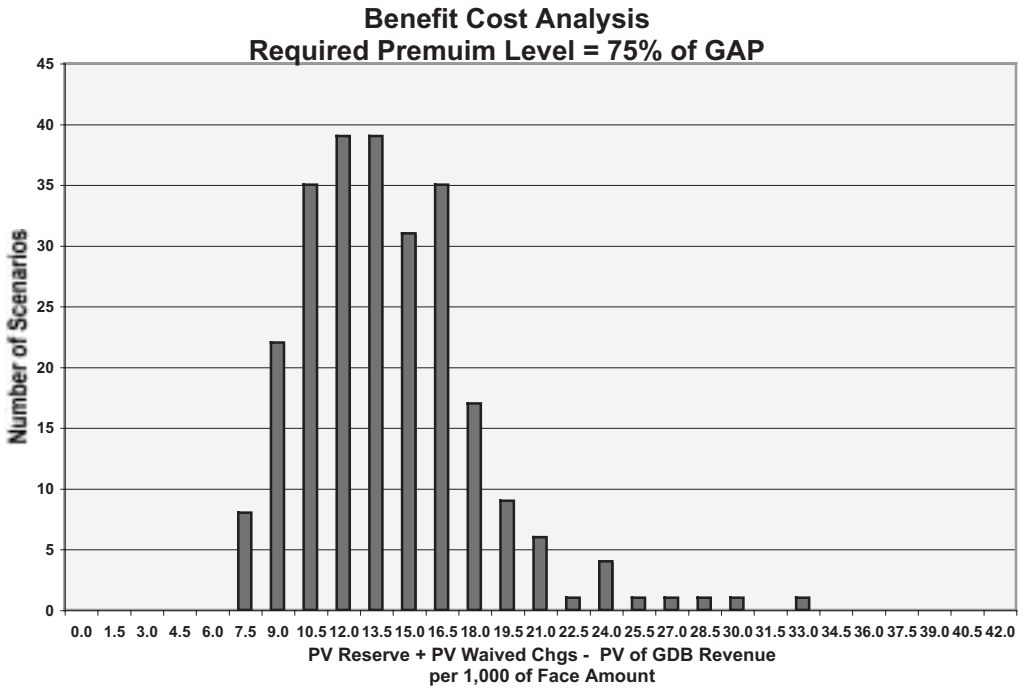

Figure 5

BENEFIT COST ANALYSIS (1980 CSO)
Investment Return Effect – Mean Costs – Issue Age 55

Mean/Standard Deviation	PV of Reserve	PV of Foregone Charges	PV of Revenue	Net PV
10%/15%	$3.56	$0.00	$0.61	$2.95
10%/20%	$4.56	$0.00	$0.61	$3.94
6.5%/15%	$5.25	$0.01	$0.61	$4.61

Figure 6

BENEFIT COST ANALYSIS (2001 CSO)
Cost Comparisons with 1980 CSO – Mean Costs – Issue Age 55

Premium Level	1980 CSO PV of Reserve	2001 CSO PV of Reserve
85% of GAP (1980 CSO)	$3.56	Exceeds 2001 CSO GAP
75% of GAP (1980 CSO)	$13.92	Exceeds 2001 CSO GAP
65% of GAP (1980 CSO)	$28.04	$0.79
60% of GAP (1980 CSO)	$36.23	$4.71