SOCIETY OF ACTUARIES

Article from:

Risks and Rewards

February 2008 – Issue 51

Attention Life Insurance Actuaries! Standard & Poor's Needs You (and C-3 Phase II) for its Insurance Capital Model

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I n its insurance capital model, Standard & Poor's Ratings Services has established criteria to adopt the NAIC's stochastic approach to variable annuity risk. This approach, which replaces existing static charges, better reflects the products' risk.

Surprisingly, although the NAIC requires the stochastic calculations, many insurance companies have struggled to provide us with reliable data. As a result, we have revised our static charges for variable annuities as a new default charge pending analyst verification of the stochastic results which we would prefer to incorporate. (See "Life Insurance Criteria: C-3 Phase II Adoption For Variable Annuity Risks Provides Enhanced Comparability And Consistency For Use," Feb. 16, 2006, and "Static Capital Charges For Variable Annuities With Living And Death Benefits Revised," May 11, 2007. Both of these articles are published on RatingsDirect, Standard & Poor's Web-based credit analysis system, at www.ratingsdirect.com.)

In launching these criteria, we have spoken with numerous constituents, including company actuaries and actuarial consulting firms. Most folks generally agree with Standard & Poor's stochastic approach. So what's gone wrong? In part, we suspect that some insurance company rating contacts coordinating Standard & Poor's annual survey request might not be reaching the right sources (actuaries) for this relatively new request with a cryptic name. Others could be misinterpreting what we are looking for. Lastly, given the complexities and confusion of adopting the NAIC requirement, there are probably companies with results that are erroneous. We believe the last case is a small minority of companies, and the overall enterprise risk management (ERM) practices of those companies would be called into question. We hope to address the first two issues by further clarifying our request and inviting actuaries to proactively assist within their companies or reach out to us for information.

If you've made it this far, you're also probably aware of the background to C-3 Phase II and the requirement to hold capital for the long-term risks of variable annuity riders, such as guaranteed accumulation, income, and withdrawal benefits. Standard & Poor's directly uses required stochastic results, while the NAIC's approach is somewhat convoluted, taking the greater of deterministic and stochastic results and optionally allowing companies to phase-in this result with old static basis. (It seems most of the insurance industry didn't realize the phase-in was optional, and they are now locked in).

Stochastic Risk Modeling

Stochastic modeling is the preferred method by which Standard & Poor's would like to reflect the living and death benefit risks in its capital model. The NAIC requires companies to rank-order their stochastic results and average the worst 10 percent of the results—referred to as the conditional tail expectation (CTE(90)—as part of its approach. Standard & Poor's uses the same data to determine the CTE(90) with two key differences:

- We need various CTE results, which we correlate to rating-based target capital levels.
- We need the results with and without the benefit of hedging, as we only provide partial credit.

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Standard & Poor's survey requests the total assets required (TAR)——with and without hedging—at various CTEs and the associated statutory reserves. The capital required is based on the difference of the TAR at various CTE levels minus the reserves held, and it allows 50 percent credit for the value of hedging. Our new capital model (see "New Risk-Based Insurance Capital Model," May 23, 2007) calculates minimum capital to be held at various target ratings by stressing risks to various confidence intervals. Similarly, capital needs for variable annuities under the revised model are based on CTE results. As a result, CTE(90), CTE(95), CTE(97), and CTE(99) correlate with BBB, A, AA, and AAA capital requirements, respectively. The current capital model will use the CTE(90) results.

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As a simple example, if an AA rated company's variable annuity capital at CTE(97)was $100 million without hedging and $50 million with hedging, Standard & Poor's would require $75 million to be held in capital. (The calculated result will have a floor risk charge of zero and not allow a capital credit to be generated.) The initial credit associated with hedging programs might be adjusted as Standard & Poor's gains comfort with each insurer's specific hedge programs and broader ERM.

The CTE data should be based on the American Academy of Actuaries' prepackaged scenarios to ensure reasonably comparable results. For hedging credit, companies must use clearly defined hedging strategies. It is understood that insurers will be incorporating statistical compression techniques to reduce the tremendous burden of running 10,000 scenarios. However, insurers modeling fewer than 1,000 stochastic scenarios need to provide Standard & Poor's an explanation to support the robustness of their modeling. The number of indices used in the replication of mutual funds will also be a qualitative consideration. It is also conceivable that Standard & Poor's will allow scenarios other than the prepackaged versions, but for that to happen, a deeper, company-specific review will be required.

Another divergence from regulatory adoption is that an adjustment will be made to reflect that reserves held for variable annuity benefits—in addition to cash surrender values—are not usually available to a company in a stress situation.

Revised Static Risk Charges

As mentioned, we've found getting stochastic company results from our C-3 Phase II survey to be surprisingly challenging. Therefore, Standard & Poor's has revised its static-risk capital charges for variable annuities with living and death benefit riders. Typically the revised static risk charges are more onerous than the stochastic ones.

The static charges apply to U.S. insurance companies where stochastic results cannot reasonably be applied because of either errors or questionable standards (fewer than 1,000 scenarios, etc.). The revised static living and death benefit risk charges are now the default capital charge for living and death benefit risk. However, we will review each insurer's C-3 Phase II survey submission and will replace the new default static risk charges if we consider the stochastic survey results to be reasonable. The new static charges will apply to both the current and revised capital models, which we are running concurrently in 2007 for our evaluation of risk-adjusted capital for year-end 2006.

The revised static capital charges for variable annuities with living and death benefit riders are based on information available through the requirements associated with NAIC C-3 Phase II and related actuarial analysis. Deterministic scenarios have been generated to represent the various at-the-money risks associated with guaranteed minimum benefits such as with associated accumulation, income and withdrawal riders. As with other factors in the revised capital model, the risk charges have been calibrated with confidence intervals associated with target rating levels (AAA, AA, etc.). The factors associated with BBB will be applied under the current model (see table).

We understand that these new static factors will not represent every company's risk given different product designs and varying market conditions. However, Standard & Poor's believes these new estimates reflect typical risks. We will not generally

Revised Static Capital Charges For Variable Annuities With Living And Death Benefit Riders				
(%)	AAA	AA	A	BBB
Return of premium death benefits	0.77	0.56	0.42	0.18
Death benefits enhanced*	3.99	3.37	2.85	1.61
Withdrawal benefits	5.52	3.46	2.73	1.37
Accumulation benefits	2.29	1.66	1.24	0.52
Income benefits	2.67	2.11	1.62	0.71
Others	3.05	2.23	1.77	0.88

*Roll-up or ratchet

make company-specific exceptions to these revised static capital charges, as we believe the best way to capture company-specific risk is through the required stochastic modeling that each insurer performs for its liabilities.

Static factors before C-3 Phase II (2005)

The prior factors did not differentiate by various riders but were solely based on riders being in or out of the money. Previous static capital charges for living benefits were a) 1 percent of variable annuity account balances that are out of the money, or b) 2 percent of variable annuity account balances that are in the money. Under the new approach, the degree to which riders are in the money will be reflected in the reserve base as reserving standards evolve (Variable Annuity Commissioner's Annuity Reserve Valuation Method; VA CARVM).

Background on the Development of the Revised Static Charges

The revised static risk charges were developed following a review of a series of more than 150 stress tests. The stress tests were applied to a static model of variable annuity benefits and considered a range of specific product designs, annuitant ages, option exercise levels, mortality levels, and annual withdrawal/surrender levels. For these stress tests, we assumed business to be hedged with a program that was 75 percent effective, meaning that when a loss event occurred, a hedge gain was assumed to offset 75 percent of the loss cost (50 percent for the more complex guaranteed minimum income benefit) of the annuity excess benefit costs. We gave the hedging offset a haircut of 50 percent, which is consistent with criteria for the stochastic-based program. Companies without hedge programs will not receive the hedge offset.

The stress tests were based on the same scenarios that are the basis for the asset-related charges in the revised capital model for equities. Similar scenarios were developed for interest rate and corporate bond fund experience. Policyholder funds were assumed to be invested in a stock/bond mix with no rebalancing.

Clearly, these tests do not accurately represent any specific company's book of business. However, by using these tests, Standard & Poor's has estimated a range of relative risk levels for the various benefit types that are reflected in the revised static charges by benefit type.

Annual Insurance Survey

In 2007, we modified the annual insurance survey we use to support our insurance capital model with input from both clients and leading actuarial consulting firms. We have requested total variable annuity account values, required reserves, TAR under C-3 Phase II, and the New York Insurance Department-based deterministic standard scenario. In addition, we request similar information by living and death benefit rider. The revised static risk charges will depend on the account values by rider. It is understood that the stochastic modeling is done on an aggregated basis and not by rider. However, Standard & Poor's is requesting estimates by rider to better understand the risk distribution. The number of scenarios modeled will also be requested and will contribute to the consideration of incorporating stochastic risk results from C-3 Phase II in lieu of the revised static variable annuity risk charges or the deterministic standard scenario.

Conclusion

Standard & Poor's believes the best way to reflect the risk of variable annuity living benefits in our capital model is through the NAIC's required stochastic C-3 Phase II results. However, when stochastic survey submissions are questionable, new default static charges will apply. The table shows BBB risk factors under the current model and by rating category under the revised capital model. ☚