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The Problem of Setting Up Additional Reserves

By Donald M. Walker, Robert W. Guth and A. Grant Hemphill

***Note from the authors:** This article will look at issues and examples of setting up additional reserves. We consider traditional reserve strengthening, health deficiency reserves under the Health Reserves Guidance Manual of the National Association of Insurance Commissioners (NAIC), and additional reserves required under asset adequacy analysis by Actuarial Standard of Practice (ASOP) No. 22. We discuss ways to set up extra reserves and what to do in subsequent reporting periods. A final issue is whether traditional or health deficiency reserve strengthening should be done to head off additional reserves under asset adequacy analysis.*

Three Kinds of Reserve Strengthening

Traditional reserve strengthening has been part of the Standard Valuation Law for a long time (i.e., before 1976). The amendments to the Standard Valuation Law in 1976 removed references to deficiency reserves, but provided for increases to basic life reserves if the gross premium for a policy is less than the valuation net premium calculated using the actual valuation method, but with minimum standards of mortality and interest. In those cases, the required minimum reserve is increased or strengthened. References to deficiency reserves returned in the Valuation of Life Insurance Policies

Model Regulation (1994 and 1998). According to the NAIC Annual Statement Instructions for 2011, Exhibit 5A (Changes in Bases of Valuation During the Year) is used to report changes to reserves for life contracts (Exhibit 5), accident and health contracts (Exhibit 6) and deposit-type contracts (Exhibit 7). These changes to traditional reserves are mostly by formula. Further definition can be found in Statement of Statutory Accounting Principles (SSAP) No. 51 (Life Contracts), item 33, "Change in Valuation Basis."

Codification of statutory accounting in 2001 introduced additional reserves known as premium deficiency reserves. These are defined in Statement of SSAP No. 54 (Individual and Group Accident and Health Contracts), item 18, "Additional Reserves (Premium Deficiency Reserves)." The calculation of these reserves is further amplified in the 2007 Health Reserves Guidance Manual that was adopted by the B Committee of the Life and Health Actuarial Task Force (LHATF). Health premium deficiency reserves are established or released annually when the expected claims payments or incurred costs exceed premiums to be collected for the remainder of a contract period. The period may extend for more than a year. These reserves are recorded in Exhibit 6, line 3.

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The adoption of the Actuarial Opinion and Memorandum Regulation (AOMR) in 1990 brought additional reserves due to asset adequacy analysis or cash flow testing (CFT). The AOMR (NAIC Model 822), section 5E(2) and (3) states:

If the appointed actuary determines as the result of asset adequacy analysis that a reserve should be held in addition to the aggregate reserve held by the company and calculated in accordance with methods set forth in the Standard Valuation Law, the company shall establish the additional reserve.

Additional reserves established under Paragraph (2) above and deemed not necessary in subsequent years may be released. Any amounts released shall be disclosed in the actuarial opinion for the applicable year. The release of such reserves would not be deemed an adoption of a lower standard of valuation.

Additional reserves from asset adequacy analysis go on Exhibit 6, line 3 for health policies, and on Exhibit 5, Miscellaneous Reserves for life policies. Some companies report it with the line(s) of business that generated it.

Differences in Types of Reserves

Because premium deficiency reserves and asset adequacy analysis additional reserves both go on Exhibit 6, line 3 for health policies, some clarification is necessary.

Traditional reserves are calculated first. Then premium deficiency reserve testing prescribed under SSAP No. 54 and as clarified in the Health Reserves Guidance Manual is performed. Finally, asset adequacy analysis is performed including those previously calculated reserves.

Health deficiency reserve testing is a short-term test for the next one to several years, where new business and selling expenses are included. All of the company's health business is tested within several specified lines of business (comprehensive major medical health, disability, long-term care and short-term health). Testing for premium deficiency is performed for separate blocks of business that are then aggregated within each specified line of business.

In asset adequacy analysis, the actuary performs a gross premium valuation over the entire business lifetime, where the actuary excludes new business and selling expenses. These results are aggregated with all other independent lines of business with offsetting risks. Upon completion, the results for asset adequacy analysis utilize previously calculated traditional reserves including any life deficiency reserves caused by X

factors and previously calculated health premium deficiency reserves. If further asset adequacy analysis additional reserves are required, these are established by the company.

Brief History of Asset Adequacy Analysis

Asset adequacy analysis has been part of the landscape for life actuaries since 1990, but it is fair to say that many appointed actuaries practicing today had never seriously considered putting up additional reserves for their companies until recently. We discuss what has changed and how some appointed actuaries have gone about the previously unresolved task of how to determine the amount of additional reserves.

It is fair to divide the history of asset adequacy testing into three eras—the early period (the 1990s), when the emphasis was on developing the methodologies to do asset adequacy analysis; the middle period (2000-07), when the processes were largely settled except for those companies doing cutting-edge product development (variable products with guaranteed benefits and universal life with secondary guarantees); and the recent period (2008 to present), when there has been economic turmoil and low interest rates. For smaller companies (the main audience for this article), who tended not to write the more exotic products, the early period was one of painful transition to a resource-consuming process with little visible return on investment. The middle period was one of finding ways to get the work done efficiently and then just marking off the task each year. Few, if any, smaller companies ever put up additional reserves prior to 2008.

That doesn't mean there weren't a few anxious moments or creeping doubts. In the mid-1990s, there was a year when interest rates had spiked upward. Anyone doing a significant amount of deferred annuity business had a bit of a problem with the "pop-up" scenario, at least until the consultants started recommending the use of the arctangent excess lapse formula. As the 2000s progressed, and interest rates trended lower, some warning signs started to crop up in the "down" scenarios for certain business segments. Problems included aging payout annuities sold when rates were high, par life modeled without dynamic dividend scales and universal life (UL) with relatively high interest rate guarantees. At that time, the failures (if any) were small and could be explained away. Reserves were adequate in aggregate. Company management could reduce dividend scales (and a 50 percent reduction made the failure go away). Nonguaranteed elements could be changed. No additional asset adequacy reserves were required, at least not at that time. Actuaries thought that as soon as rates rose a bit, everything would be fine.

But then came the economic downturn of 2008. Consultants standing up at the Valuation Actuary Symposium in September 2008 told us we had a responsibility as appointed actuaries to do our jobs right (and to read that Halloween letter!). This was a heavy burden and there was very little guidance on how to actually determine an asset adequacy reserve.

2007 had been an easier year than most. Spreads had been wide, so reinvestment income had been there in most scenarios. Default rates had been low for a long time. All of a sudden, it might have been wrong to have made those assumptions last year. New assumptions would be required for the new era.

Cases after 2007

Case Study 1 (2008)

Yield curve (Sept. 30, 2008): 90 day at 0.92 percent, 10 year at 3.85 percent

Spreads: very wide; default risk was a very big concern

Economy: crisis; almost complete loss of confidence in markets and ratings

Starting bond Asset Valuation Reserve (AVR) was largely wiped out by Lehman failure and resulting Other Than Temporary Impairments (OTTI).

CFT assumption changes:

Assume spreads grade back to precrisis "normal" over 30 months. Assume defaults have major spike up in first 15 months and return to precrisis "normal" over 36 more months. Assume ratings cannot be relied on; revise modeled ratings based on market prices.

Results (New York 8 (NY8) and Risk-Based Capital 200 (RBC200)):

Combined company results showed immediate loss of surplus (1 percent of company surplus) in all scenarios driven by increased defaults and no AVR. Level and up scenarios recovered and ended positive. Down scenarios ended negatively after 12 years.

Life segments had gains in up scenarios and losses in down scenarios. Deferred annuities were hurt in up scenarios. Payout annuities failed all scenarios (worst was 1 percent of payout reserves). Down scenarios losses could be mitigated by cutting dividends on traditional par life.

Conditional Tail Expectation at 85 (CTE-85) stochastic results were a deficiency of 4 percent of company surplus. Modeling a 25 percent dividend cut reduced the deficiency to 0.6 percent of surplus.

Other considerations:

Management will reduce the dividend scale in 2010. Agents were told to illustrate 88 percent of current (2009) dividends. CTE-85 stochastic results now have a deficiency of 1.7 percent of surplus. If payout annuity reserves are recomputed with Annuity 2000 (A2000) mortality and the lowest stat interest rate of recent years, those reserves would be strengthened by 2.5 percent.

Conclusion:

The 2008 asset adequacy reserve is set at 1.7 percent of surplus (60 percent to cover immediate default risk and 40 percent for long-range deficiencies). The 60 percent is allocated to all business and the 40 percent to payout annuities. The appointed actuary considered management's future dividend decision in forming the opinion. During 2009, the additional reserve is carried forward based on additional strengthening needed by payout annuities.

Reflections:

The appointed actuary in 2012 believes that some of the assumptions were perhaps more than moderately adverse. Defaults recovered quickly. The yield curve at Dec. 31, 2008, was significantly below that at Sept. 30, 2008, and should have been considered. These two results may have offset to some extent, but it was a reasonable first effort in a regime-changing year.

Case Study 2 (2010)

Yield curve (Sept. 30, 2010): 90 day at 0.16 percent, 10 year at 2.53 percent

Spreads: tight compared to 2008, but still 50 basis points above long-term "normal"

Economy: Recovering, but interest rates are very low again Starting bond AVR is almost nil from prior year losses and OTTI.

CFT assumption changes:

Assume spreads grade back to "normal" over 36 months if five-year Treasury rises above 3 percent, but do not revert if interest rates remain low. Assume defaults are 1.2 times Moody's ultimate and revert to "normal" over 36 months. Health deficiency reserves of 36 percent above traditional health reserves are established before asset adequacy analysis. These are caused by excessive operational expenses after loss of a large account, and by poor claims experience.

Results (NY8):

"Combined company results showed immediate loss of surplus (1 percent of company surplus) in all scenarios driven by increased defaults and no AVR."

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Combined company results showed positive results in all scenarios.

Health and life segments together are essentially at breakeven, except for positive results in one plan that are aided by health deficiency reserves. Deferred annuities (mostly with 3 percent guarantees) have losses in all but two scenarios of New York 7 (NY7). Annuities need additional reserves of 9 percent of surplus to break even. Health results are positive enough to cover annuity losses.

Other considerations:

Annuity results have a long-term problem with low interest rates. Health results are unstable year after year and depend on premium deficiency reserves this year. Company seems to have difficulty working out of the health deficiency. The health and life positive results were historically unstable and unlikely to always cover the annuity losses.

Conclusion:

The 2010 asset adequacy reserve is set at 9 percent of surplus and is allocated to annuities. The appointed actuary thought that the annuity losses were serious and long term and unlikely to go away under level and down scenarios. The additional reserve was held until 2011 and was retained then.

Reflections:

The appointed actuary in 2012 thought that the additional annuity reserve may have been conservative but that it was appropriate given the uncertainty about long-term low interest rates. In 2012, management cut back on commission and other expenses and that may allow positive annuity results in future years if interest rates recover a little.

Case Study 3 (2011)

Yield curve (Sept. 30, 2011): 90 day at 0.02 percent, 10 year at 1.92 percent

Spreads: continuing to narrow but still wider than long-term averages

Economy: U.S. debt downgraded by S&P, but Europe in deep trouble; U.S. economy still in slow recovery

Starting bond and mortgage AVR were largely rebuilt.

CFT assumption changes:

Assume that spreads would grade back to early 2000s levels over 12 to 24 months (depending on asset class; best class grades back quickest). Assume that bond defaults follow

updated long-term averages, including results from crisis. Mortgage defaults vary based on year the loan was underwritten. Consideration is given to both agency ratings and market values to classify assets. Existing deferred annuities are at minimum guaranteed crediting rates in level scenario.

NY8 results:

Combined company results are positive in early years of projections, but go negative in the later years of the level and down scenarios. Level scenario loss is 3 percent of surplus without mitigating assumptions; downs are worse.

Individual segment results:

Life segments fail level and down scenarios; annuities pass all scenarios. Starting yield curve is so low that annuities get better results in the up scenarios (which is unusual; they usually do worse in the ups). Life failures can be partially mitigated by substantial dividend cuts on par business, but there is no easy solution to universal life failures (other than increasing Cost of Insurance Rates (COIs)); UL failure in level scenario is 8 percent of surplus.

Stochastic results (RBC200):

Generally better; possibly due to upward interest rate bias in the generator. CTE-85 for UL is negative 5 percent of surplus but total company CTE-85 is positive.

Sensitivity tests:

Results are very dependent on renewal premium levels assumed for interest-sensitive products. Delayed pop-up and grade-up scenarios show deteriorating results the longer the rate increases are delayed. A roll-forward level scenario (using real rates for October, November and December, then level at year-end) shows similar results to NY8 level at September. 30 curve).

"Results are very dependent on renewal premium levels assumed for interest-sensitive products."

Other considerations:

Dividend scale decrease begins Jan. 1, 2012; senior management has approved mild renewal premium restrictions where possible. No action on UL. Note that dividend scale was based on mid-year 2011 portfolio and yield curve projections; rates are lower now.

Conclusion:

The 2011 asset adequacy reserve is set to 4 percent of surplus, almost all of which is allocated to UL. The appointed actuary considered management's current and possible actions relative to dividend scale changes, renewal premium restrictions on annuities and UL, and other possible UL changes. He thought that management would react where reasonable but would not take extreme actions (such

as a UL COI increase). He considers the level scenario to be credible and cannot completely dismiss the downs. He has budgeted to do further increases in the asset adequacy reserve amounting to 1 percent of surplus during 2012 if rates stay at current low levels (as forecast by the Fed).

Self-critique:

The appointed actuary believes he is setting a reasonable number for 2011 and taking a reasonable forward-looking action during 2012. His current dilemma is what to do if rates start to rise. He thinks it would be wrong to release the reserve without evidence that the increase is more than transitory and without further refinement of the models. His likely 2012 actions will range from maintaining the current reserve to increasing it.

Reflections on Setting Additional Reserves

There are several ways actuaries can set up additional reserves with asset adequacy analysis. If there are any health premium deficiency reserves to be calculated, those are computed first. Many actuaries think it is prudent to have in mind ahead of time what criteria are needed to pass asset adequacy analysis and issue an unqualified opinion. There is further guidance in the Life Practice Note on Asset Adequacy Analysis, December 2004, available from the American Academy of Actuaries (see questions 88 to 95). In the answer to Q90, it is stated, "In the end, it is the actuary's judgment as to the need to establish additional reserves subject to the chosen criteria. The basis of any judgment is typically documented in the supporting memorandum."

Many actuaries do not believe that cash flow projections need to pass all scenarios, although some actuaries (and sometimes regulators) take that position. However, when the discounted present value of ending surplus in several scenarios becomes negative, many actuaries establish additional reserves to raise the present value of at least some scenarios to at least zero. There seems to be even less guidance about when to release these reserves. Some of us have released reserves as soon as possible, even the next year, in spite of the potential to set up more additional reserves a year later. Others of us have retained additional reserves in future years until a higher standard is achieved (e.g., all scenarios are positive for all years). One of us has done both. The more years that low interest rates continue, the more we are asking if a long-term plan for additional reserves is needed.

We know that some companies have filed extra asset adequacy reserves in New York, for companies domiciled elsewhere. The New York Department of Financial Services has required (without publication) these companies to set their asset adequacy reserve at least as high as the present value of any ending negative market surplus in the New York 7 scenarios.

(We realize that the New York law specifically suggests this is not required.) For ending surplus, they accept the market value of assets less the cash values of most products and less the statutory reserve of term products. For a company domiciled elsewhere, the N.Y. asset adequacy reserve is reported in the New York supplement and not in the annual statement. If the New York asset adequacy reserve exceeds surplus, then an adverse opinion is provided to N.Y. and perhaps an unqualified opinion, even without any asset adequacy reserve, might be given elsewhere. Some actuaries have worded this New York "opinion" as something other than their opinion. It is really a formulaic reserve but more complex and allowing for some judgment about assumptions.

When an asset adequacy reserve is released or reduced, that should be disclosed in the opinion, Regulatory Asset Adequacy Issues Summary (RAAIS) and memorandum. No permission is required. Accounting guidance is fairly clear that the change in the asset adequacy reserve is a normal reserve increment but it is sometimes reported as a surplus adjustment. California requires that the cash flow testing be repeated, including the additional reserve and supporting assets, to verify that the problem has been eliminated.

Two of us often map or fit 10,000 random scenarios to the NY7 to calculate probabilities. We use methods of Longley-Cook or E. Chueh to map the scenarios. We then use the probability of the scenarios in computing the additional reserve or assessing the need for a reserve. In the last two years, the probabilities of the down scenarios have been very small. This may be a critique on the random scenarios we generate but does reflect the unusual times we are in.

Some of us believe that the asset adequacy reserve need not eliminate future statutory negative surplus. This is a test of asset adequacy. Will the cash flows from the investments and the premiums cover the benefits and expenses? Some regulators have tried to also make this a test of future solvency. That is a much higher standard that was not intended when cash flow testing was developed. Statutory reserves are intended to be redundant. To add an extra layer of security to that redundancy, we ask the cash flow question. Those who also demand future solvency are asking that the assets backing the current redundant reserves cover all future reserve redundancy.

If several moderately adverse scenarios would require an asset adequacy reserve that would result in an adverse opinion, must that be established immediately? At least one of us might make an exception. There is a difference between Company A, which we project will be in severe financial difficulty in 2015, and Company B, which we project will be in severe

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difficulty in 2035. Some might argue that both are in severe difficulty now. However, it might be appropriate to establish only part of the otherwise needed asset adequacy reserve for Company B. After we get management's attention, they can be informed of alternatives and perhaps given a year or two to correct their problems. There are regulators who will discuss this in a meaningful way.

Should I Strengthen Traditional Reserves or Set Up AOMR Additional Reserves?

In considering which reserves to strengthen, there are several considerations. Traditional reserves that are strengthened cannot be released. Asset adequacy analysis reserves are more temporary, and can be established and released annually as the cash flow projections dictate. It would seem that traditional reserve strengthening is useful if there is a way to do so to solve a long-term product problem. In today's environment, we might think that given low interest rates, an annuity line with 3 percent minimum guarantees requires a traditional reserve fix,

even if it cannot be undone later. Another consideration is the tax reserve issue. Traditional reserves are tax reserves when the policy is issued, and traditional reserves set a ceiling on tax reserves. Asset adequacy analysis additional reserves are not tax reserves. The actuary will want to consider these issues in deciding which reserves to establish.

Conclusion

How to strengthen reserves is an issue that we expect will come up more frequently in the next few years. Our reflections above begin to examine criteria and examples of reserve strengthening. The economic era since 2008 clearly has raised issues not considered before 2000. We trust our examples are helpful, and we encourage further dialogue on this issue in future seminars, meetings and articles. We hope even more that the need for the dialogue will go away, but our expectation is that some continued dialogue will unfortunately be prompted by difficult economic conditions. ●



Donald M. Walker, ASA, MAAA, is the director—Life Actuarial Department for Farm Bureau Life Insurance Company of Michigan in Lansing, Mich. He can be reached at dwalker@fbinsmi.com.



Robert W. Guth, FSA, CERA, MAAA, is the appointed actuary for Everence Association, Inc. in Goshen, Ind. He can be reached at bob.guth@everence.com.



A. Grant Hemphill, FSA, FCA, MAAA, is senior actuary for Bruce and Bruce Company in Lake Bluff, Ill. He can be reached at ghemphill@babco.us.com.