

# Dodging Potholes on the Asset



**T**here once was a woman who lived down the street from me who had deteriorating eyesight. She was a great neighbor and friend, but I used to cringe whenever I saw her driving down the road. I was especially concerned when children were out playing. I knew she could drive legally but wondered if her driving was the best choice.

In the same way, when an actuary “drives down the road” in asset liability forecasting software, looking through his pension actuary glasses, a professional bond manager cringes by the side of the road.

I know this professional neighbor doesn’t have any problems with the asset liability forecasting software the actuary drives. In fact, he likes it because, unlike others, it can link asset returns and liabilities to interest rate movements through regression analysis. This is often superior to linkage through correlation coefficients, which can have flaws. This asset liability forecasting software can take the actuary to either the stock market or the bond market, as his circumstances dictate.

# Liability Forecasting Highway

*With asset liability studies on the rise, more and more new drivers are jumping into the asset liability forecasting car and starting down the road. But watch out for potential potholes. There's more to consider than just smoothed contribution and expense.* By Mark Ruloff

As a good driver of this software, his input is fully developed and he has considered both short-term risk and long-term goals, so that's not a concern. The concern is the "glasses" the actuary wears while driving. The pension funding and accounting rules give a view of the pension plan that's different from the one the actuary would see if he were to take these glasses off. These glasses focus on contributions and expense, which smooth out "unrecognized" sharp market drops, and if the actuary isn't careful, he may not see obstacles in his path he should avoid.

Consider the following, which reduce the impact of market volatility or otherwise favor stocks over bonds:

- ▶ The actuarial value of assets, for both contributions and accounting expense, can smooth out market movements.
- ▶ Gains and losses, for both contributions and accounting expense, are amortized rather than immediately recognized.
- ▶ We often reduce the liabilities by raising the funding actuarial interest rate when there is a larger allocation to stocks, effectively recognizing future expected gains immediately. (Is it reasonable for liabilities to change with a change in the asset allocation?)
- ▶ Our funding actuarial interest rate is a long-term rate and tends not to move as severely as does the investment return actually realized.
- ▶ Although the accounting discount rate is based on rates currently available to settle liabilities, FASB permits a range of rates that the plan sponsor can adjust to smooth out volatility.
- ▶ Accounting rules allow gains and losses within 10 percent of the greater of the projected benefit obligation (PBO) or market value of assets to remain unrecognized.

We should also study the effects of alternative asset allocations without these permitted rules. Otherwise, we can find that:

- ▶ We frequently box ourselves into a corner. Once we depend on asset smoothing to dampen stock volatility, it becomes increasingly difficult to move back to market value.
- ▶ When we use an assumed actuarial interest rate that rises with an increase in the stock allocation, we distort our future

asset allocation study results. Future studies will tend to favor allocations that have returns above the actuarial assumed rate because other allocations will likely result in increasing contribution levels. The effect becomes a circular issue as larger allocations to stock lead to a higher interest rate assumption, which leads to larger allocations to stock.

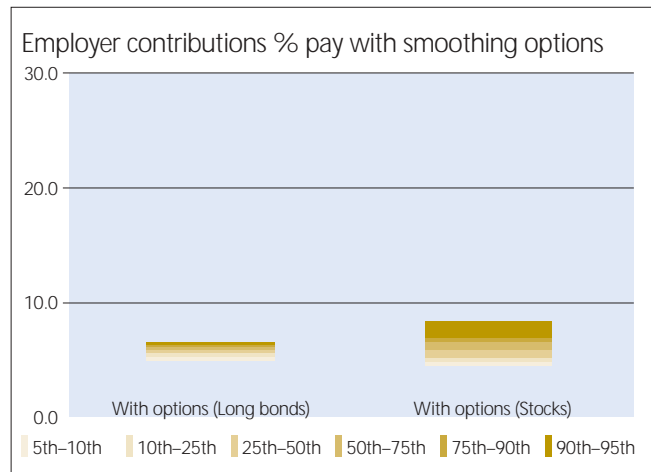
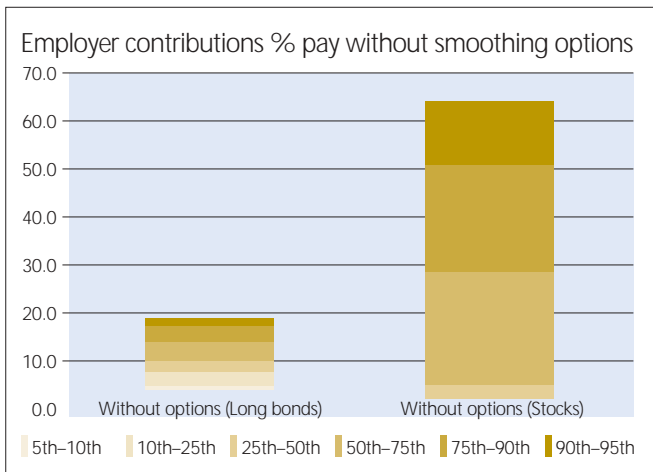
To make some comparisons, I ran some stochastic simulations with a hypothetical sample case. The following charts show the effect on contributions of making use of several of the permitted options under the rules and, with an alternative "pair of glasses," not making use of those permitted options. Options used and then removed are:

- 1 Five year smoothing of asset gains/losses in the actuarial value of assets
- 2 Amortization of gains/losses
- 3 Constant assumed interest rate rather than a rate moving with market rates

First, let's look at an example of next year's projected minimum contribution as a percentage of payroll if we remove the options available to actuaries to smooth out results.

The chart first includes two bars, both for the case without the smoothing options. The left bar represents the range of employer contributions when the fund is invested entirely in long-term bonds, and the right bar represents that range when the fund is invested entirely in stocks.

Observe that the left bar indicates employer contributions as a percentage of pay within a range of 2 percent to 19 percent, whereas the right bar has a range from 0 percent to 67 percent. Clearly, the range of the right bar is the greater of the two. We see a tremendous increase in annual volatility when the fund is invested in stocks, and, therefore, we see obvious short-term advantages to bonds. The standard deviation in the contribution percentage more than quadruples between the "all bond" and the "all stock" allocation. Note that the removal of the option to amortize gains and losses produces much more dramatic swings in contribution levels than actuaries are used to seeing.



Now let's look at the results using the permitted options for smoothing the contribution results.

Again, the chart includes two bars, both for the case with the smoothing options. The left bar represents the range of employer contributions when the fund is invested entirely in long-term bonds, and the right bar represents that range when the fund is invested entirely in stocks.

Observe that the left bar indicates employer contributions as a percentage of pay within a range of 5 percent to 7 percent, whereas the right bar has a range from 4 percent to 9 percent. Smoothing reduces the effect on the contributions to within a few percent of payroll. The options available have a far greater impact than the asset allocation selection itself. In effect, these permitted options more than wipe out the effect of being more aggressive and allocating more to stock. The short-term volatility of stocks is all but gone. What we're left with is the potential long-term earnings advantage of stocks.

Some feel that, while contribution calculations should contain room for a flexible contribution range, financial information reported to plan sponsors, plan participants, and shareholders shouldn't be flexible. Under this view, liabilities and assets both would be marked to market. The liability would therefore reflect current market conditions and not possible future gains, assets wouldn't be smoothed, and gains and losses would be recognized immediately. Individuals with this view would want to back out the effect of smoothing.

Consider the following example of how asset smoothing might come into play.

Company A doesn't use asset smoothing when reporting [FAS 87](#) expense. Company B is identical to Company A, except that it smooths asset gains or losses over five years. Both suffer the same substantial loss on their investments. Because Company B is smoothing the asset-based losses, it has a lower FAS 87 expense in the current year, but the expense will be higher later on.

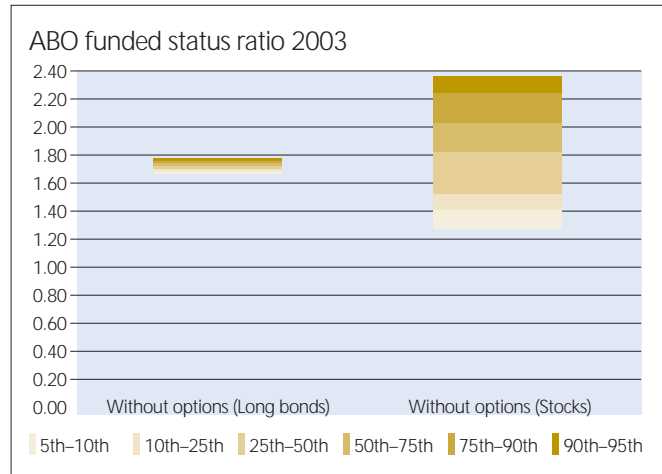
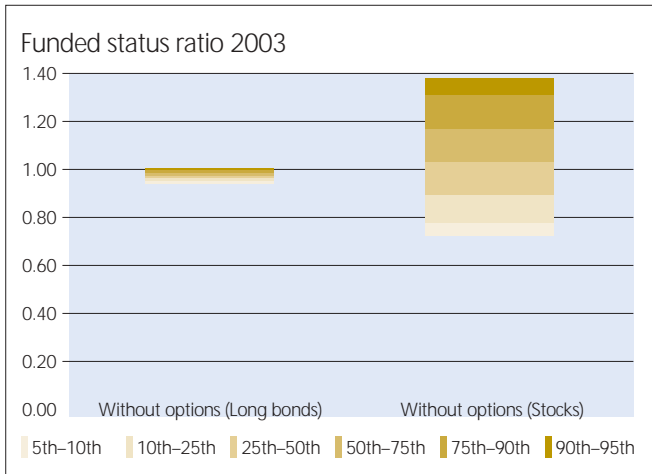
When comparing the two companies, a financial analyst determines that he needs to recognize that Company B is smoothing these losses. He determines that the values of Company A and Company B are identical once he removes the distortion of smoothing of the asset loss as part of the evaluation process.

Company C is identical to Company B, except that aggressive investing has left it with greater losses. However, Company C isn't initially overly concerned because it knows that the smoothing method will result in FAS 87 expense similar to that

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of Company A. However, Company C is surprised to learn that the financial analyst's value of Company C is far below the value of Company A, because the financial analyst first removed the effects of smoothing in order to compare Company A and Company C on an equivalent basis.

In a bear market, the use of asset smoothing, in this case, gave Company C a false sense of confidence.

FAS 87, while containing room for smoothing, calls for some disclosure before smoothing. Financial analysts would be wise to focus on the FAS 87 "funded status." The FAS 87 funded status shows, in the footnote disclosure of the stockholders' report, the assets compared to the liabilities of the plan before smoothing. By focusing on the funded status, financial analysts can compare companies on a more equivalent basis, producing a less biased financial assessment.

Unfortunately, many actuaries have focused on the smoothed FAS 87 expense, but focusing on FAS 87 expense alone will result in an asset allocation selection skewed in favor of stocks in much the same way that focusing on smoothed contributions did.

Let's look at the funded status ratio for the above example with smoothing (which would be almost identical to without smoothing).

The left bar represents the range of the FAS 87 funded status ratio when the fund is invested entirely in long-term bonds, and the right bar represents that range when the fund is invested entirely in stocks. Ratios above 1.00 would signal that the assets are more than sufficient to cover the liabilities, while ratios below 1.00 would signal that the assets are less than sufficient. Comparing the asset allocation effect on the funded status ratio more clearly highlights the disadvantages of the volatility of stocks and the associated risk borne by the plan sponsor.

Let's also consider the volatility of the assets compared to the accrued benefit obligation (ABO). When the funded status ratio of the ABO falls below 1.00, participants' accrued benefits are at risk and it's likely that shareholder equity will be reduced.

The left bar represents the range of the FAS 87 ABO funded status when the fund is invested entirely in long-term bonds,

and the right bar represents that range when the fund is invested entirely in stocks. As you can see, this ratio, although well above 1.00 in this example, is very volatile when the fund is invested in stocks. It's easy to see that, if the example were slightly different, the risk of falling below 1.00 would be significantly greater over the short term with the all-stock allocation as compared to the all-bond allocation, a situation to be avoided given the resulting reduction in shareholder equity.

In conclusion, with asset liability studies on the rise, more and more new drivers are jumping into the asset liability forecasting car and starting down the road. The purpose of this paper is to caution them about some potential potholes. We need to consider more than just the smoothed contribution and expense.

Financial analysts realize that management and actuaries have tools to "unrecognize" or defer the effects of bad returns in the pension plan. Financial analysts make adjustments to this information to arrive at a current value for the company that reflects any deferral actuaries put in place. Perhaps the general purpose of FAS 87 would have been better served if it had required an expense that left nothing "unrecognized." However, this is not the current accounting environment.

When showing the impact of plan sponsors' financial decisions, we should consider recognizing everything and studying the impact of different asset allocation options before we apply our magic to smooth out volatility. At the very least we should include looking at the FAS 87 funded status, which displays information before smoothing. Analysis of the funded status should not be overlooked, as it may be used by financial analysts to get a fuller picture of the economic status of the plan.

**MARK RULOFF** IS A FELLOW OF THE SOCIETY OF ACTUARIES, AN ENROLLED ACTUARY, AND A MEMBER OF THE AMERICAN ACADEMY OF ACTUARIES. HE ALSO HOLDS AN NASD SERIES 65 LICENSE. HE CURRENTLY WORKS FOR WINKLEVOSS TECHNOLOGIES (WINTech) IN GREENWICH, CONN.