INTERRELATIONSHIP BETWEEN STATUTORY FORMULA RESERVES AND VALUATION ACTUARY RESERVES

MR. STEVEN A. SMITH: I would like to talk about the interrelationship between statutory formula reserves and valuation actuary reserves.

I have chosen structured settlements as the focal point for this discussion for a couple of reasons. First, structured settlement annuities are very long-term liabilities; the average expected length of benefit period is typically forty years or more. The problem is that you can't invest that long. You can buy maybe an average of twenty- to twenty-five-year bonds if you want to buy long bonds. But you can't invest all of your money for forty years or more. A significant amount of your cash flow is therefore going to occur beyond the time of your bond maturities (or calls).

The other reason for choosing structured settlements is that there are no cash values. The amount of disintermediation risk is therefore very small for this kind of benefit.

Take the example shown in Slide 1 (Case 1). I picked 1982 because that is a worst case year. The right-hand column indicates that we have a 13.25 percent valuation interest rate. Yet we are earning 15 percent on the bonds that we bought. The first two

SLIDE 1

CASE 1 - STRUCTURED SETTLEMENT ANNUITIES

Year of Purchase	Maturity Year	Book Value of Assets Purchased in Year at Par	Average Yield at Purchase	Book Value of Assets Owned at Year-End 1987	Statutory Reserve at Year-End 1987	Valuation Interest Rate
1982	2007	$100,000	15.00%	$100,000	$100,000	13.25%

columns indicate that there is a twenty-five-year difference between the year of purchase (1982) and the year of maturity (2007). In this case we bought twenty-five-year bonds. Everything seems in order since the investment yield rate exceeds the valuation interest rate.

Slide 2 (Case 2) goes one step further. The main difference between Slide 2 and Slide 1 is that there is only $40,000 worth of book value of supporting assets at year-end 1987. You originally bought $100,000, but you only have $40,000 left. You still have your 15 percent yield rate on the assets that are left versus the 13.25 percent valuation interest rate. However, it looks like there might be some sort of a problem because you just don't have enough assets to back $100,000 worth of 13.25 percent reserves. You may have sold the bonds. You may have traded them. The bonds may have been called.

Slide 3 shows that we bought $100,000 of twenty-five-year bonds in every year from 1982 to 1987. The average yield on purchase has dropped, as it has over the last five or six years. The right-hand column shows the valuation interest rates, which are the immediate annuity valuation interest rates for the last six years. Just for the sake of argument, suppose that you have $100,000 of statutory reserves on each block at the end of 1987 for a total of $600,000. The average valuation interest rate is 10.67 percent as shown in column 7. You've got $660,000 of total bonds that are earning 10.57 percent, which is 10 basis points below the average valuation interest rate.

SLIDE 2

CASE 2 - STRUCTURED SETTLEMENT ANNUITIES

Year of Purchase	Maturity Year	Book Value of Assets Purchased in Year at Par	Average Yield at Purchase	Book Value of Assets Owned at Year-End 1987	Statutory Reserve at Year-End 1987	Valuation Interest Rate
1982	2007	$100,000	15.00%	$40,000	$100,000	13.25%

SLIDE 3

CASE 3 - STRUCTURED SETTLEMENT ANNUITIES

Year of Purchase	Maturity Year	Book Value of Assets Purchased in Year at Par	Average Yield at Purchase	Book Value of Assets Owned at Year-End 1987	Statutory Reserve Year-End 1987	Valuation Interest Rate
1982	2007	$100,000	15.00%	$40,000	$100,000	13.25%
1983	2008	100,000	13.00	50,000	100,000	11.25
1984	2009	100,000	12.75	60,000	100,000	11.25
1985	2010	100,000	11.75	70,000	100,000	11.00
1986	2011	100,000	9.75	240,000	100,000	9.25
1987	2012	100,000	9.00	200,000	100,000	8.00
		$600,000		$660,000	$600,000	10.67
			11.88%	10.57%		

You may think at first that the column entitled Book Value of Assets Owned at Year-End 1987, is "pie in the sky." I suggest that it is not. If you have never gone to your investment department and asked them to take their Schedule D (the bond assets) and have that listing sorted by purchase year, you are in for a shock!

At my company, we primarily have a buy-and-hold strategy. We have been buying discount bonds to support structured settlement annuities. Our situation is not as bad as the one shown in Slide 3. However, I was really surprised at how many of the assets that were purchased at a deep discount (bonds with 8, 9 or 10 percent coupons when interest rates were 15 or 16 percent) were no longer in our portfolio at year-end 1987. Some of the bonds have been called in spite of their low coupon rates. The investment department sold some because they wanted to lengthen maturity, to increase the quality rating or to increase the total par value in the portfolio. These kinds of transactions, when viewed by themselves, are good reasons for having traded the bonds away.

The important thing is that in the normal form of Schedule D, you cannot tell what the distribution of assets is by purchase year. So I strongly recommend that you have your Schedule D rerun by purchase year. I can almost guarantee that you will be in for a major shock!

Slide 3 shows that we have an insufficient "spread" in the aggregate. However, we have $60,000 more assets than liabilities ($660,000 versus $600,000). What actually happened is that in 1986 and 1987 many of the older bonds with the higher coupon rates got called or traded. The higher the original interest rate was, the more bonds got called. The proceeds of those calls or sales were reinvested after perhaps paying some capital gains taxes in 1986 and 1987.

Let's get back to thinking about those 13.25 percent interest-rate reserves for 1982 issues. The statutory formula says that the reserves of 1982 with a level interest rate of 13.25 percent forever is acceptable. The question is when is it not acceptable?

I think the valuation actuary has an obligation to consider this question separate and apart from calculating "valuation actuary reserves." Common sense needs to be used when you are calculating your statutory formula reserves.

What my company has done for its structured settlement annuity liabilities is to use valuation interest rates that are lower after twenty years. The reason we picked twenty years for the grading period is that we were buying twenty-year assets to support the block of liabilities. Even if the assets aren't sold, they are going to mature in twenty years, and you don't know where interest rates will be when the call or maturity occurs.

The question is, should you strengthen reserves and when? Or should you do something in advance with graded interest rate reserves? Graded interest rate reserves are now a part of Regulation 126. They are not yet a requirement but rather an optional methodology.

As another example of when level interest-rate reserves may be insufficient, consider the 1982 block of $100,000, 13.25 percent reserves. Suppose you knew that all those assets were going to mature next year and that they were not going to be here. Interest rates are now at 8 or 9 percent. Maybe you have to think about doing something. You may have significant cash flow or yield mismatches that are going to occur in the future, possibly the near future.

Slide 4 is another way of looking at the information in slide 3 except that I have taken $60,000 out of the 1987 reserves shown in slide 3, reducing the 1987 total from $200,000 down to $140,000. Now we have $600,000 of both reserves and assets. The average yield rate on your assets is 10.73 percent versus a 10.67 percent average valuation interest rate, which gives us a 6 basis point spread. But will it last?

In Case 4, we took all of the assets out of 1987 because that gave the best answer, but maybe we shouldn't do that. Maybe we should take a pro rata share of all of the assets, which is shown in Case 5 (Slide 5). Here, the $600,000 of assets are just a pro rata

SLIDE 4

CASE 4 - STRUCTURED SETTLEMENT ANNUITIES

Year of Purchase	Maturity Year	Book Value of Assets Purchased in Year at Par	Average Yield at Purchase	BookValue of Assets Owned at Year-End 1987	Statutory Reserve at Year-End 1987	Valuation Interest Rate
1982	2007	$100,000	15.00%	$ 40,000	$100,000	13.25%
1983	2008	100,000	13.00	50,000	100,000	11.25
1984	2009	100,000	12.75	60,000	100,000	11.25
1985	2010	100,000	11.75	70,000	100,000	11.00
1986	2011	100,000	9.75	240,000	100,000	9.25
1987	2012	100,000	9.00	140,000	100,000	8.00
		$600,000		$600,000	$600,000	10.67
			11.88%	10.73%		

SLIDE 5

CASE 5 - STRUCTURED SETTLEMENT ANNUITIES

Year of Purchase	Maturity Year	Book Value of Assets Purchased in Year at Par	Average Yield at Purchase	Book Value of Assets Owned at Year-End 1987	Statutory Reserve at Year-End 1987	Valuation Interest Rate
1982	2007	$100,000	15.00%	$ 36,364	$100,000	13.25%
1983	2008	100,000	13.00	45,455	100,000	11.25
1984	2009	100,000	12.75	54,545	100,000	11.25
1985	2010	100,000	11.75	63,636	100,000	11.00
1986	2011	100,000	9.75	218,182	100,000	9.25
1987	2012	100,000	9.00	181,818	100,000	8.00
		$600,000		$600,000	$600,000	10.67
			11.88%	10.57%		

share of the original $660,000. Now we see that we are back to the 10.57 percent earned rate versus the 10.67 percent valuation interest rate. If you put your regulator's hat on for a moment, you would see that there is a potential problem -- even if the valuation actuary opinion and memorandum seems acceptable. I think that the valuation actuary has a moral obligation to take a look at this type of situation. If you don't have real asset segmentation, where and how are you going to pick the assets to "support" the reserves?

In Case 6 (Slide 6), instead of buying twenty-five-year bonds every year, the company bought ten-year "high-yield" (junk) bonds. The average maturity of high-yield bonds is about ten years. There aren't many fifteen-year maturities out there and essentially no twenty- or twenty-five-year maturities. In Case 6 you have a 13.88 percent average yield rate versus the 10.67 percent average valuation interest rate. We have over 300 basis points of interest margin. But is that enough to cover the default risk? Maybe it is. Maybe it isn't. But that is a separate question. Let's put our regulator hat on again for a moment and move down to the year 1990 or 1991, with the same set of reserves. Only now it happens that interest rates have dropped significantly. You know that those assets, which had an original ten-year maturity, are going to start maturing a year or two from now. I think there is a problem.

SLIDE 6

CASE 6 - STRUCTURED SETTLEMENT ANNUITIES - HIGH YIELD BONDS

Year of Purchase	Maturity Year	Book Value of Asssets Purchased in Year at Par	Averge Yield at Purchase	Book Value of Assets Owned at Year-End 1987	Statutory Reserve at Year-End 1987	Valuation Interest Rate
1982	1992	$100,000	18.00%	$ 40,000	$100,000	13.25%
1983	1993	100,000	16.00	50,000	100,000	11.25
1984	1994	100,000	15.50	60,000	100,000	11.25
1985	1995	100,000	14.50	70,000	100,000	11.00
1986	1996	100,000	13.00	220,000	100,000	9.25
1987	1997	100,000	12.50	160,000	100,000	8.00
		$600,000		$600,000	$600,000	10.67
			14.92%	13.88%		

Suppose you are the New York Insurance Department actuary at year-end 1987. You know that those assets are going to start maturing in five years. The liabilities are going to last an average of forty more years. Are additional reserves needed?

I don't think the writers of the dynamic valuation law contemplated structured settlements. I believe that retirement annuities with an average age of sixty-five were the primary focus and not an average annuitant whose age at issue is in the range of thirty or thirty-five with a forty-year life expectancy.

In conclusion, the kinds of issues that I have discussed with respect to structured settlement annuities are true of many other kinds of blocks of business. It was just easier to characterize some of the issues using the structured settlement annuities. With structures, the situation is less complicated since assets cannot be taken out of the company because a policyholder takes his cash surrender value. You may need to think about graded or other kinds of advanced provision reserves if you have just a few years left to the maturity of the supporting assets or if you have very long liabilities. If you have an active trading strategy as opposed to a buy-and-hold strategy, you may also have a problem. And it is a gray area as to which assets support which liabilities. Finally, how much excess yield over the valuation rate is enough before you have to start thinking about potential reserve insufficiencies?