1997 VALUATION ACTUARY SYMPOSIUM PROCEEDINGS

SESSION 9

Equity-Indexed Products Overview

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EQUITY-INDEXED PRODUCTS OVERVIEW

MR. GREGORY P. HENKE: I work for Goldman Sachs, and I cover insurance companies with respect to derivatives and derivative products. I'm substituting for Jeff Mulholland who couldn't be here. The other panelist, Chuck Butts, is a consultant at Aurora Consulting in St. Louis, Missouri, and specializes in product development, especially product development as it relates to marketing strategies. I will turn this over to Chuck.

MR. CHARLES M. BUTTS, JR.: My portion of this session is an overview of equity-indexed products. Specifically, I'm going to speak about the current products in the marketplace, their features, and their options. Then I'm going to talk about the Standard & Poor's (S&P) index, and also some of the other indices that are currently being used in the equity-indexed products. I'm then going to go through some examples of hypothetical returns that a customer might have received had he or she invested in current products with some historical S&P data. I will go through a detailed example of crediting of excess interest to a particular policy. For that example, I'm going to use the annual reset method and show the calculation of the index credit and its interrelationship with the guaranteed contract value. Finally, I will discuss some pricing basics. I'm going to use a conceptual example of a point-to-point equity-indexed annuity, and then talk about some of the issues that should be considered and are unique to the pricing of an equity-indexed product.

I want to first talk about the basic design. I'd like to qualify what I say as being generally true most of the time, but with the wide variety of designs and features and bells and whistles out there in the marketplace, there's an exception to almost any generality. First thing is that most of these products, or the overall majority, are nonregistered. The one exception that I'm aware of that's on the market is a CNA product, although there are rumors of other registered products coming out. A feature in common to all these products is that they credit excess interest via an index and index formula. They also have at least two sets of values. One is a guaranteed set of values with a minimum interest, and the second is an index value. Those two are molded into an account value and a surrender value either via a surrender charge or some type of vesting schedule. The other feature that's common in virtually all products is that they have a liquidity window. The products that would go with those, whether an annual or period crediting formula, provide liquidity windows at the end of the term. Those windows are typically five to seven years, although some are longer and some are shorter.

Further on the basic design in terms of annuities, the most common formula out there is the usual 90% of premium of 3% to three years. There are some of the newer products out there that are using a 100% of premium, 3% and sometimes a little higher interest rate, and a surrender charge combination in terms of guaranteed contract values. On the life side, there are two life products out there, and they are using a 2.5% guarantee and a surrender charge on the account value.

The index value in the various index products is based on a participation in an index, typically the S&P, and you can get stated participation rates from 50% to in excess of 100%. It is possible to get in excess of 100% because of the various averaging and other techniques used in the formula for calculating the actual dollar amount. There is a variation of the percentage participation which is what I call a spread participation. This provides for 100% participation in the index in excess of a spread or hurdle rate that produces the equivalent of a participation rate to the customer. The vast majority of these products are based either exclusively on the S&P or often the S&P 500 as one of the options in the equity-indexed product.

All of the products that I'm aware of are using the S&P index, which is quoted on the nightly news, and that is excluding the dividends that are a part of the S&P total return. The participation on these, depending on product design, is either quoted annually or at the end of the period or end of the term, which is again the five- to seven-year period.

The surrender value of these contracts is a combination of the greater of a guaranteed cash value, or contract value as it's usually called, an index value to which either a surrender charge or a vesting schedule is applied to reduce it below 100% of value. Again they offer 100% liquidity at the windows.

There are three basic methods for crediting index credits. The first is the point to point, which would be a beginning index value. I'll use the S&P. You begin at contract issue with an S&P or a date when you accumulate premiums and make an investment, which is a feature of some of the contracts, and your gain on the S&P is from that point to the end of the term, which is typically five to seven years. The second major variation is the annual reset, which again starts with the beginning S&P, but makes a calculation each year at the ending value of the contract. This is sometimes also referred to as the ratchet, in that if the S&P is actually down, you get the benefit of starting at the lower point, so you can reap all of the potential gains in a year following a downturn in the S&P.

The third major method is the high point, which over the term of the contract looks for the high point usually at contract year-end, though there are some that will look for the high point period and then take an average of those high points. But the method is essentially looking at the high point during the term and basing your participation off of that.

There are variations that you can apply to each of these three methods. One is an averaging you can do over the full term in terms of taking the month-end S&P during the year and averaging those. That is one way of averaging one contract credit interest. Or you will see what's called an Asian end on some of the point to point. If you had a five-year term in the contract, over the last six months of the contract, they would look at the S&P at the month-end for the last six months and then take an average of those. The Asian end is to take a bit of the volatility out of the contract, and your contract is not based solely on a single day S&P. As we have seen recently, you can get dramatic movement in one day. The Asian end takes some of that volatility out of it.

Most of the contracts, at least contractually, have caps and floors in them. Some of the contracts are not utilizing those right now, though they are found in most of the contracts even if they're not being utilized.

Some of the indexes that are being used in the market today include the S&P 500 and its cousins, the S&P 400 and 100. Someone has introduced a bond index into equity-indexed products, and they're using the Lehman Brothers aggregate bond index. There is a NASDAQ 100 out there. The next two, as far as the current market goes, go together. There are a couple of international indexes out there, but they are both proprietary, in that they were created by a basket of indexes that the company put together, using such things as the DAX, etc., the European indexes. I would expect soon to see somebody come out with a Dow based product. Dow Jones has had a long history of not allowing their index to be used in derivatives or futures of any sort. They've recently allowed the AMEX to trade Dow indexes, so I suspect that somewhere in some insurance company actuarial department, they're working on that right now.

The products in terms of the index values first feature either a vesting or a surrender charge, or you get the same place in terms of the spread load products, and you get the effect of holding that part of the gain by virtue of the way the spread load formula and credit is calculated. We're beginning to see multiple indexes within one product, which results in what are essentially subaccounts. The product does begin to look like various investment options within it. There is at least one contract out there that uses something very similar to the guaranteed minimum death benefit and annuity in that they structure their death benefit to equal the premium compounded at a minimum rate of interest, so that it's, in effect, a guaranteed minimum death benefit in an equity-indexed annuity.

In some of the products there is some "trust me" participation. This relates to products in which they are not buying all of the options up-front and that they're offering a participation rate that is current and is valid for the current contract year, but can be adjusted after the initial term or in the future, and an index participation that is much lower for the lifetime of the contract.

There are a couple of contracts that credit actual excess interest. Instead of taking all of the option budget, which is in essence, the excess interest credit that is anticipated, and buying an option, there are a couple of companies that are splitting that into two pieces and providing an excess interest declaration over and above the 3%, and spending part of the excess interest that way and part of it in options, so that those typically have a lower participation rate, but they have a higher level of guarantees because of the credit of excess interest.

As with fixed annuities, there's bonus interest out there and there's bonus annuitization. With bonus annuitization, you get a product that can get very complex, because not only do you have to track the contract value and the index values, but also you have to track that both with and without annuitization bonus. There are a lot of numbers floating around in the contract.

The products that are currently in the market consist of the original contract, which is a single premium deferred annuity. There are a number of flexible premium annuities. Those are using 75% as opposed to 90% as the basis for the guaranteed contract values. There are fixed premium universal, flexible premium. The fixed option in variable annuities even predates the stand-alone, equity-indexed product. It's in a variable product that is registered, but it is a general account contract within the variable annuity.

The one registered product that is on the market that I'm aware of is part of a modified guaranteed annuity, which offers a number of interest rate buckets with market value adjustment in addition to the equity-indexed bucket. Recently one company has come out with an immediate annuity based upon an equity-indexed formula.

I would like to talk about the S&P and its return over the years versus some standard measures. What I have illustrated here is a period using month-end values between December 1976 and 1996, illustrating the S&P index, and comparing that with the consumer price index (Chart 1). We can consider the ten-year U.S. Treasury yield compounded for the period, and then the total return of the S&P. It shows a tremendous difference in the rate of return over time that dividend components of the S&P can make, realizing that all of the products out there to date are based upon the index.

I have also illustrated this same comparison for another 20-year period beginning 1966 going to 1986 (Chart 2). The significant point of this is that the S&P index return is at the bottom of the heap. Right now there is a lot of euphoria with the bull market and how wonderful the S&P and everyone's invested in equities. This is just a reminder that the S&P can be a dog, too.

CHART 1

1976-97

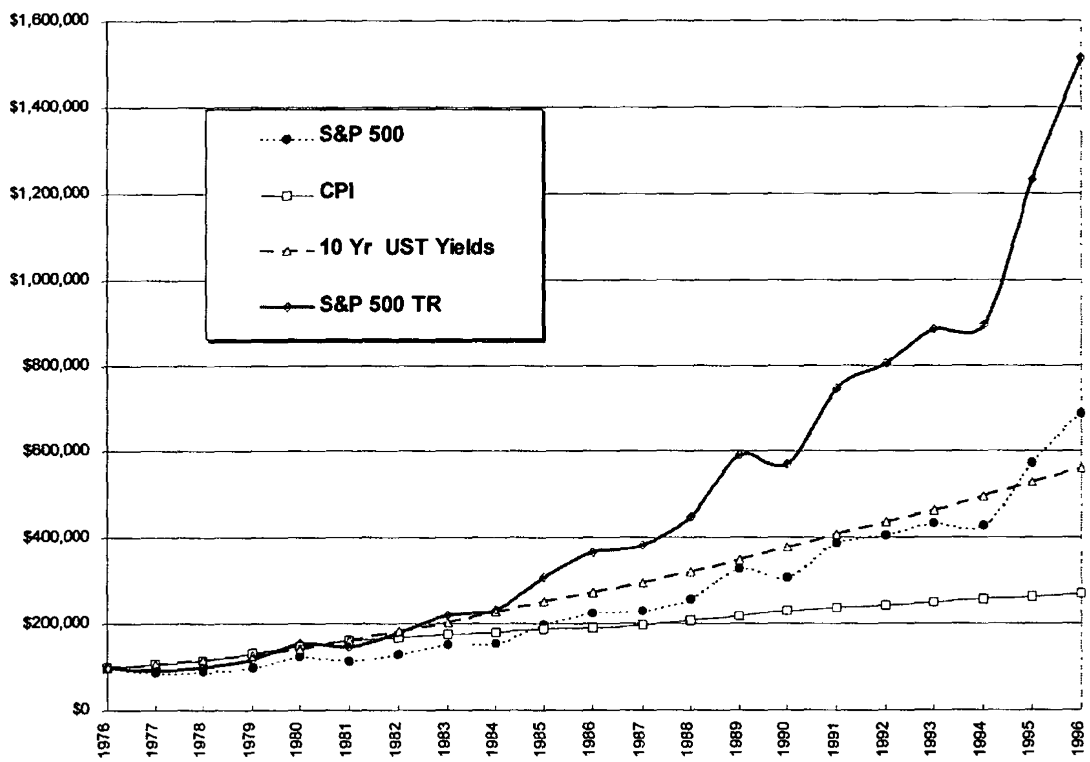
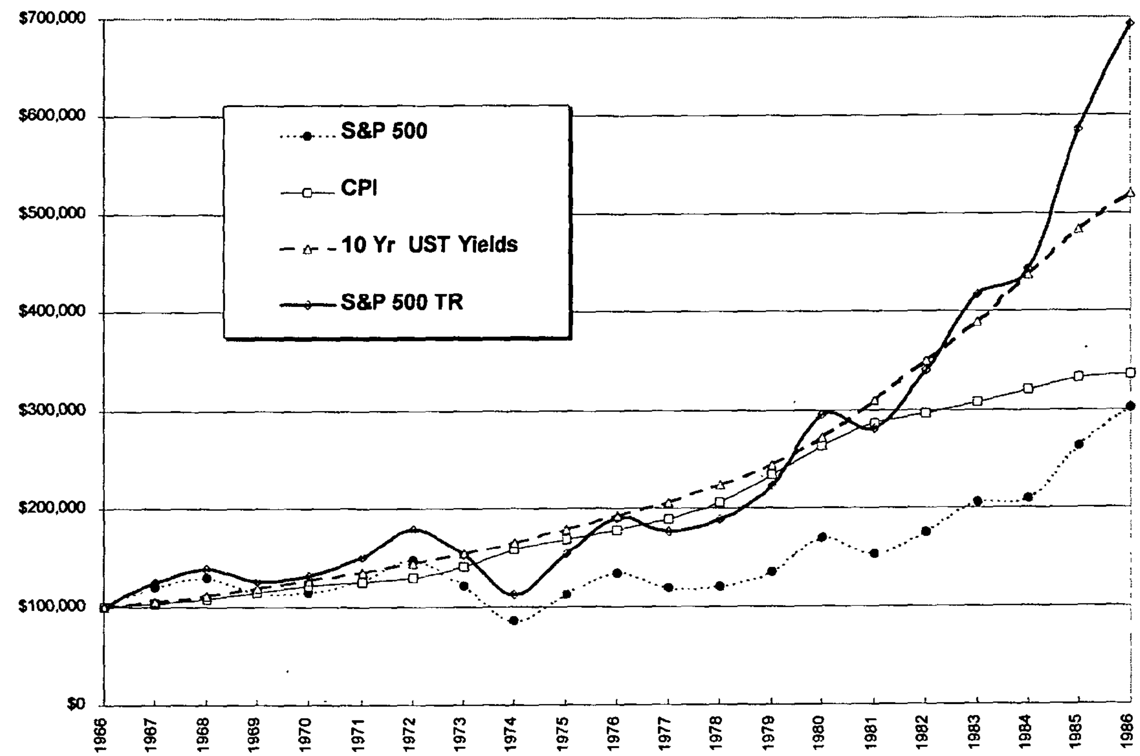


CHART 2

1966-86



The next thing I'd like to do is give you a hypothetical on how an annual reset product would have performed over those same two periods for a $100,000 premium, 90% at 3%, seven-year term, 70% participation rate, at a 14% cap. In that 1966 to 1986 period, I have the S&P graph versus an annual reset (Chart 3). This is to illustrate that with an annual reset product, because you capture most of the gains, suffer none of the losses, in a market that has volatility in terms of the S&P moving down, in a product that only has 70% participation, you can actually outperform the S&P, the base index.

If you move that same example forward to the 20-year period from 1976 to 1996, which is described as the biggest bull market ever, you can see that there is less volatility in the market (Chart 4). The effect of only having a participation in the market is you will tend to lag behind. These formulas can both outperform and underperform the S&P.

My next example is projecting a high point product through that same period of years. This one has a participation of 65%, but no cap. Other than that it's an identical example. In the 1966-1986 period, it has fairly well tracked the market, but it has the effect by using the high point, of smoothing out the year performance, as opposed to the S&P (Chart 5). Then again in the 1976-96 period, because it is only a participation in the index and not the full index, it is again, lagging behind the index itself (Chart 6).

We can consider all three of these examples together for the two periods with the S&P. For the period of 1966-86, because of the volatility, the annual reset performs better, and if you go to the next period, you get very comparable performance (Charts 7 & 8). One of the fallacies of all of this is that people who publish things like this take current participation rates, current pricing of options, current volatility and project that. That's a horrible assumption to make, because if you watched the equity-indexed market over the past three years, you've seen the participation rates widen, and there is no one yet who has attempted to recreate what option pricing would have done to participation rates historically. Why this exercise is interesting is no one has really done a scientific study in determining what percentage rates might have been credited. It's interesting, speculative and as far as I know there's no good answer as to best design, which is what this comes down to.

CHART 3

Annual Reset 1966-86

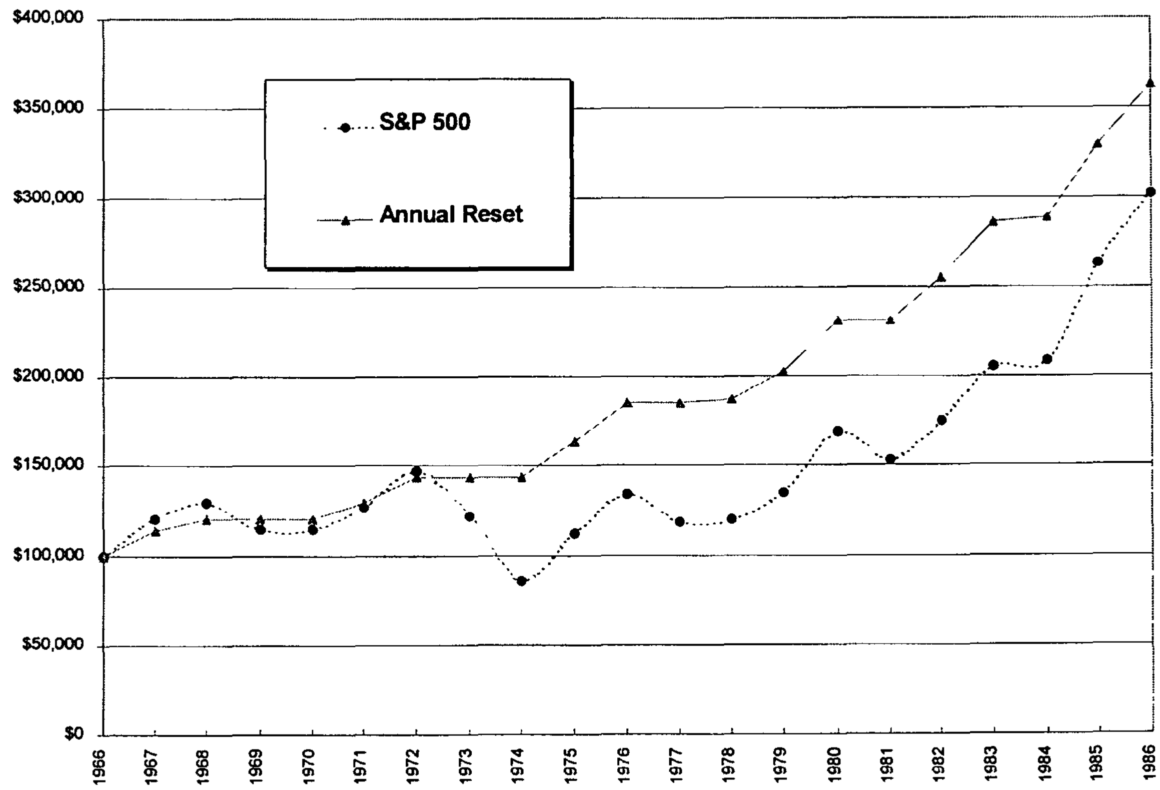


CHART 4

Annual Reset 1976-96

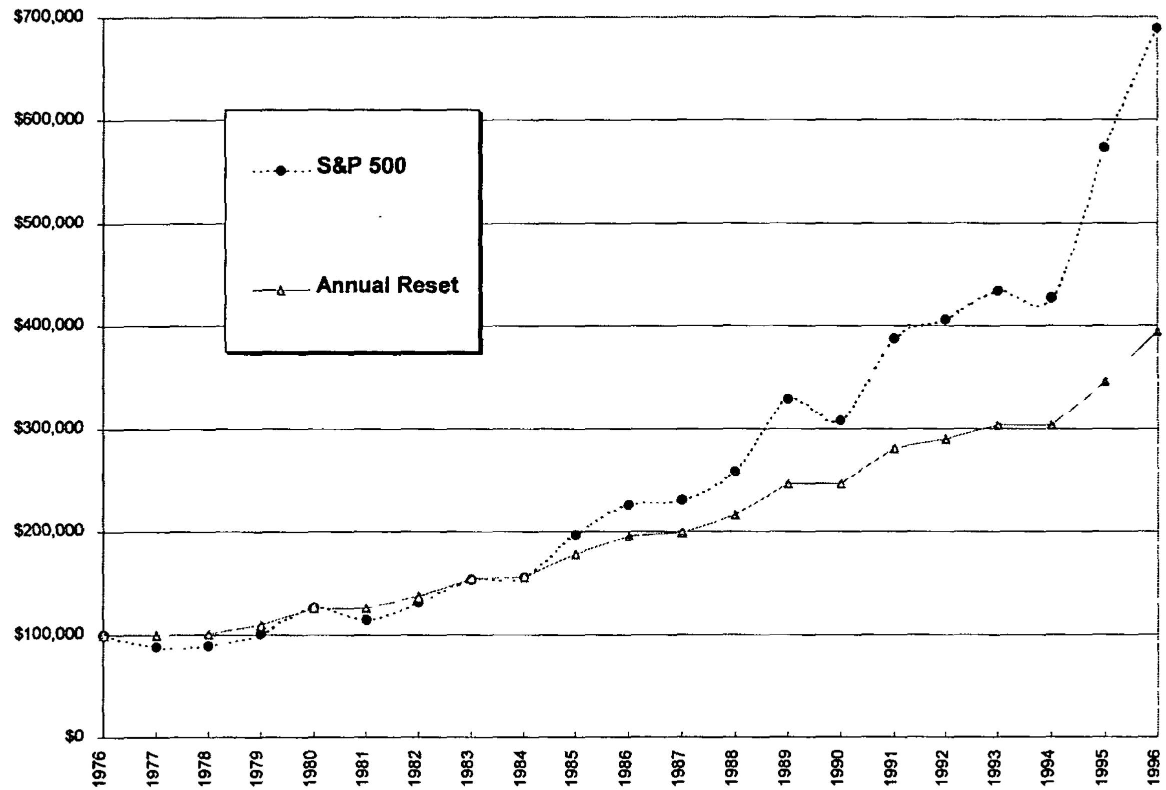


CHART 5

High Point 1966-86

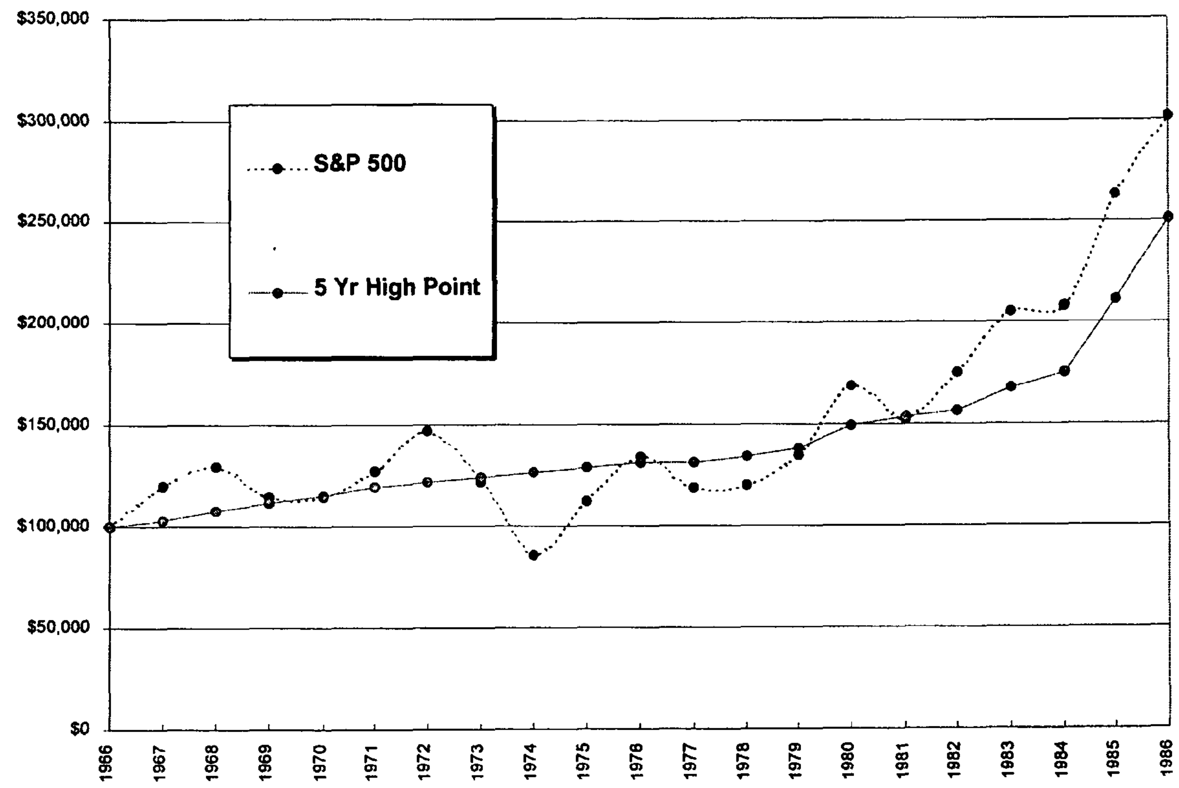


CHART 6

High Point 1976-96

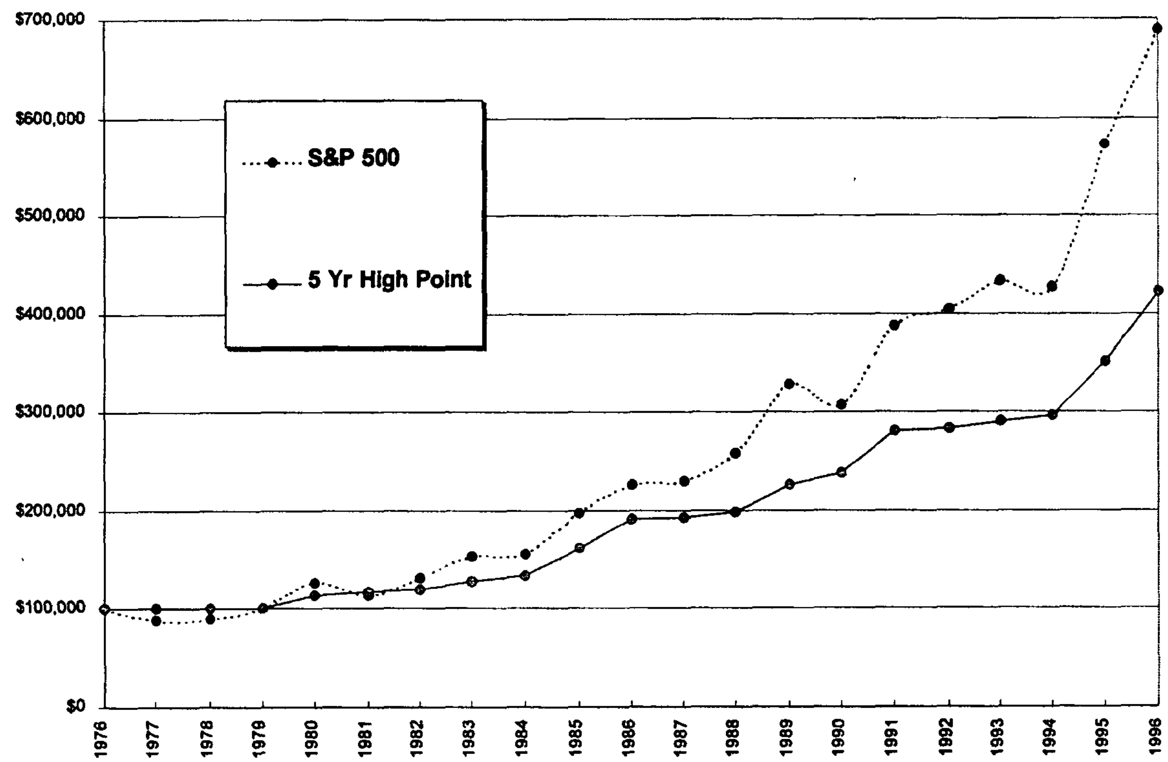


CHART 7

Annual Reset vs High Point
vs. S&P 500 -- 1966-86

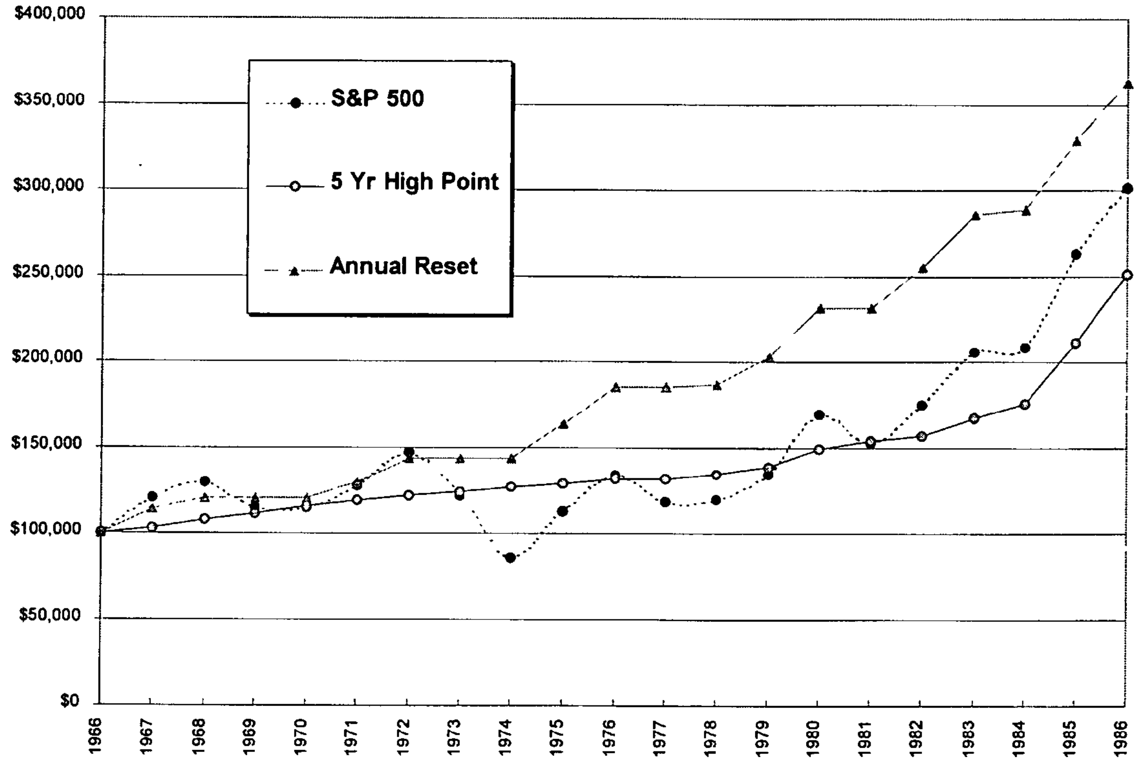
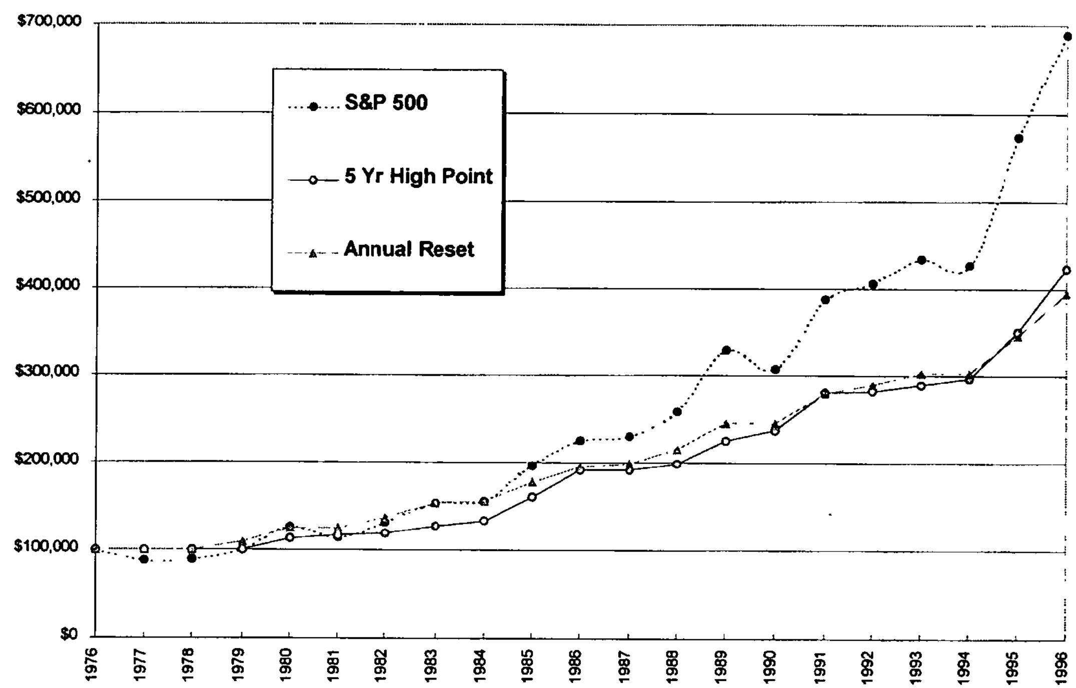


CHART 8

Annual Reset vs. High Point vs. S&P 500 -- 1976-96



Next I'd like to go into some detail and work in terms of the inner workings of the policy from a single policy point of view as to how the crediting formulas work. For that example, I've chose an annual reset. It's a seven-year example and I've used the end S&P from 12/31/89 to 76, premium $100,000, contract value participation 70%, cap at 14% and a floor at 0%, surrender charge of 8%, and a free withdrawal of 10%.

The actual S&P value, 353.4 at issue, and then the end of year values at years one through seven are shown in Table 1. The next step in the process is to translate those into a change in the S&P. We started off with a loss of 6.56%, a good year 25% and change, etc. These are then subjected to the participation rate since you're entitled to only 70% of the change, the next column is nothing more than the performance multiplied by 70%. The final step in the process to get the rate that's actually used to credit interest to the policyholder is by subjecting those returns to the floor and the cap. In the years that you have a negative return, you earn nothing and the returns in the second year where you actually earned 18.41% at 70% participation, the policyholder is still only credited with 14%. Then in the years the return is between 0 and 14, you get 70% of the return.

TABLE 1
Index Crediting Rates

Year	S&P 500	Change in S&P	70.0% of Change	Index Credit
Issue	353.4			
1	330.2	-6.56%	-4.59%	0.00%
2	417.1	26.31	18.41	14.00
3	435.7	4.46	3.12	3.12
4	466.5	7.06	4.94	4.94
5	459.3	-1.54	-1.08	0.00
6	615.9	34.11	23.88	14.00
7	740.7	20.26	14.18	14.00

These rates are then applied to the index value, which is the premium, and in the first year there is no credit, so the value remains level (Table 2). The next year it is 14, until you build up to a final index value of $160,330 in year seven. This particular contract applies a surrender charge to the index value. It's an 8% surrender charge, but it has a 10% free out, so it gives you an effective surrender charge of 7.2%. The final column represents the index value less a 7.2% surrender charge. Now we have half the values.

TABLE 2
Index Value (Account Value)

Year	Index Credit	Index Value	Index Surrender Value
Issue		$100,000	$92,000
1	0.00%	100,000	92,800
2	14.00	114,000	105,792
3	3.12	117,562	109,098
4	4.94	123,368	114,486
5	0.00	123,368	114,486
6	14.00	140,640	130,514
7	14.00	160,330	148,786

The other half are fairly straightforward, which is nothing more than the $90,000 or 90% compounded at 3% (Table 3). Then if we get the surrenderable value for the contract during the first term, we need the comparison of the index surrender value and contract surrender value taking the largest value, which gives us the amount of money that the policyholder could actually surrender for (Table 4). In this particular example, all of those values result from the index surrender value, and that's really reflecting the bull market over the past seven years, as the S&P participation has dwarfed the 3% contract guarantee.

TABLE 3
Guaranteed Contract Value

Year	Contract Value
Issue	$90,000
1	92,700
2	95,481
3	98,345
4	101,296
5	104,335
6	107,465
7	110,689

TABLE 4
Surrenderable Value

Year	Index Surrender Value	Contract Value	Surrenderable Value
Issue	$92,000	$90,000	$92,000
1	92,800	92,700	92,800
2	105,792	95,481	105,792
3	109,098	98,345	109,098
4	114,486	101,296	114,486
5	114,486	104,335	114,486
6	130,514	107,465	130,514
7	148,786	110,689	148,786

One final item in determining the value is the end-of-term window (Table 5), which is a period of 30-45 days following the seventh anniversary in this case, the policyholder has a window in which he can take his money and run. This is somewhat unique and not normally seen in fixed-annuity products. There is a period where there is no surrender charge, much like a bank certificate of deposit at maturity.

We now get to the end of the term, and we need to do an excess interest calculation. What we do there is simply take the beginning of the first term value, which is a $100,000 index value and $90,000 in the contract value and subtract: take the end of first term value and subtract the beginning value from that to calculate the first term interest under the index value and under the contract value (Table 6). The difference between those is $39,641, which is the excess interest, which is then credited to the contract value for the beginning of the second term (Table 7). You take the two end-of-year values, add excess interest to the contract value, and we are ready to begin another term with an index value of $160,330, and a contract value of $150,330. The difference between those two is exactly $10,000, that's by design. That's the 10% load on the original $100,000 deposit.

TABLE 5
End of Term -- Window

Year	Index Credit	Index Value	Index Surrender Value
Issue		$100,000	$92,000
1	0.00%	100,000	92,800
2	14.00	114,000	105,792
3	3.12	117,562	109,098
4	4.94	123,368	114,486
5	0.00	123,368	114,486
6	14.00	140,640	130,514
7	14.00	160,330	148,786
Window			$160,330

TABLE 6
End of Term -- Excess Interest

	Index Value	Contract Value
Beginning of 1st Term	$100,000	$90,000
End of 1st Term	160,330	110,689
Total 1st Term Interest	$ 60,330	20,689
Excess Interest		$39,641

TABLE 7
Second Term -- Initial Values

	Index Value	Contract Value
End of 1st Term	$160,330	$110,689
Excess Interest		39,641
Beginning of 2nd Term	$160,330	$150,330

I next want to take this example through another term and for that I have made up some hypothetical numbers, so I could get the results I wanted. Again, it has a 3% contract interest rate, participation at 65, cap and floor at 12 and 0. This example, in terms of crediting rates, shows what would best be described as a flat market or bear market. There are no spectacular years of performance in the S&P. We again work through the change in the S&P, subjected to the 65% participation rate, turn that into an index credit, and by the time we're through, we have some fairly paltry credits on the index side (Table 8).

This illustration turns the index credits into an index value starting with our $160,330, which was the ending value of the first term. It takes them through the end of the second term for $183,711, and an index surrender value at the end of $170,484 (Table 9).

TABLE 8
Index Crediting Rates
Second Term

Year	S&P 500	Change in S&P	65% of Change	Index Credit
7	740.7			
8	790.0	6.65%	4.32%	4.32%
9	730.1	-7.58	-4.93	0.00
10	735.8	0.78	0.51	0.51
11	766.7	4.20	2.73	2.73
12	775.9	1.20	0.78	0.78
13	842.2	8.54	5.55	5.55
14	834.8	-0.88	-0.57	0.00

TABLE 9
Index Value (Account Value)
Second Term

Year	Index Credit	Index Value	Index Surrender Value
7		$160,330	$148,786
8	4.32%	167,260	155,217
9	0.00	167,260	155,217
10	0.51	168,109	156,005
11	2.73	172,698	160,263
12	0.78	174,045	161,513
13	5.55	183,711	170,484
14	0.00	183,711	170,484

Again, the rather mundane contract value is shown in Table 10, $150,330 at 3%. In this instance, because of the paltry performance of the S&P, the contract value controls in most years, with the exception of year eight, where the index value is greater than the contract value (Table 11). So the surrender value that is available to the customer mostly reflects the contract values and in only one year reflects the index values.

TABLE 10
Guaranteed Contract Value
Second Term

Year	Contract Value
7	$150,330
8	154,840
9	159,485
10	164,269
11	169,197
12	174,273
13	179,501
14	184,886

If we illustrate the window in terms of the index values, it is of little importance because the contract value exceeds the index value (Table 12). You have a longer window. As long as the contract value is exceeding that, the customer can get full value from the account.

I want to finish this example by doing the end of second-term adjustments. These get a little more complex. On the index value side, you start with the beginning of second term value, end-of-term value and calculate the second-term interest, and then you add to that total interest from the first term to give you an inception-to-date interest number for the index values. On the contract value, you do the parallel calculation, calculating second-term interest, first-term interest, and inception-to-date interest on the contract value (Table 13). You then calculate inception-to-date excess interest, which in this case is the $28,466, subtract and/or compare that with the prior excess interest credit, and if that's a negative number, there is no excess interest for the period, which is the case in this situation, since the excess interest in the contract that's already been paid exceeds the exception to date. There is no excess interest credit for the second term. However, when you find yourself in this situation, there is an item which I call the index adjustment, but it is in essence a truing up of the index value to the guaranteed value, when the guaranteed value at the end of the term exceeds the index value. In terms of starting the third term, the index value, which had been $183,711, is increased to the index value, and your beginning of term three values are exactly equal, and you have lost and lost forever the $10,000 differential once this occurs. From this point forward in the contract, both the index value and the contract value at the beginning of all terms, will be starting from exactly the same point.

TABLE 11
Surrenderable Value
Second Term

Year	Index Surrender Value	Contract Value	Surrenderable Value
7	$148,786	**$150,330**	$150,330
8	**155,217**	154,840	155,217
9	155,217	**159,485**	159,485
10	156,005	**164,269**	164,269
11	160,263	**169,197**	169,197
12	161,513	**174,273**	174,273
13	170,484	**179,501**	179,501
14	170,484	**184,886**	184,886

TABLE 12
End of Term -- Window
Second Term

Year	Index Credit	Index Value	Index Surrender Value
7		$160,330	$148,786
8	4.32%	167,260	155,217
8	0.00	167,260	155,217
10	0.51	168,109	156,005
11	2.73	172,698	160,263
12	0.78	174,045	161,513
13	5.55	183,711	170,484
14	0.00	183,711	170,484
Window			**$184,886**

TABLE 13
End of Term -- Excess Interest
Second Term

	Index Value	Contract Value
Beginning of 2nd Term	$160,330	$150,330
End of 2nd Term	183,711	184,886
Total 2nd Term Interest	23,382	34,557
Total 1st Term Interest	60,330	20,689
Inception-to-Date Interest	83,711	55,245
Inception-to-Date Excess Interest		28,466
Less Prior Excess Interest		39,641
Net Positive Excess Interest or Zero		--

The basic concept in pricing an equity-indexed annuity in this case is that the excess interest determines the indexing budget. What you would normally have earned in fixed investment income in excess of the guarantees and expenses is invested in options or derivatives. The option payoff, if any, is then used to credit interest instead of a conventional excess interest.

I'd like to do a simple conceptual example on how that works. On this one I've chosen a seven-year point to point, and arbitrarily decided it's an Asian end, which means that the participation is measured by the average of the six month-ends at the end of the seven-year term. Asian ends aren't necessarily six months, it's an averaging technique. It could have been the last year, the last three months, it's purely arbitrary in terms of product design, and I chose an 80% participation, which is fairly realistic.

We have the $100,000 premium. I assumed an investment rate of 7.25%, guarantee load low to 10%, 3% interest. I'm assuming that has cost $7,000. It costs you $300 to issue the contract and $60 a year to maintain it, and you send off to Wall Street $24,000 to purchase the option.

What I will now describe is almost an allocation of premium, and how it works over a seven-year period (Table 14). You've taken in $100,000 of premium. You have determined that at 7.25% you need to put $67,814 away so that you have your $110,000 in change at the end of the term. You've spent the marketing money, you've spent the issue money, the present value of $60 a month is spent, you've spent the option costs, and you have total expenses of $99,458, which means you made $542 or a little better than half a percent of premium for the first term.

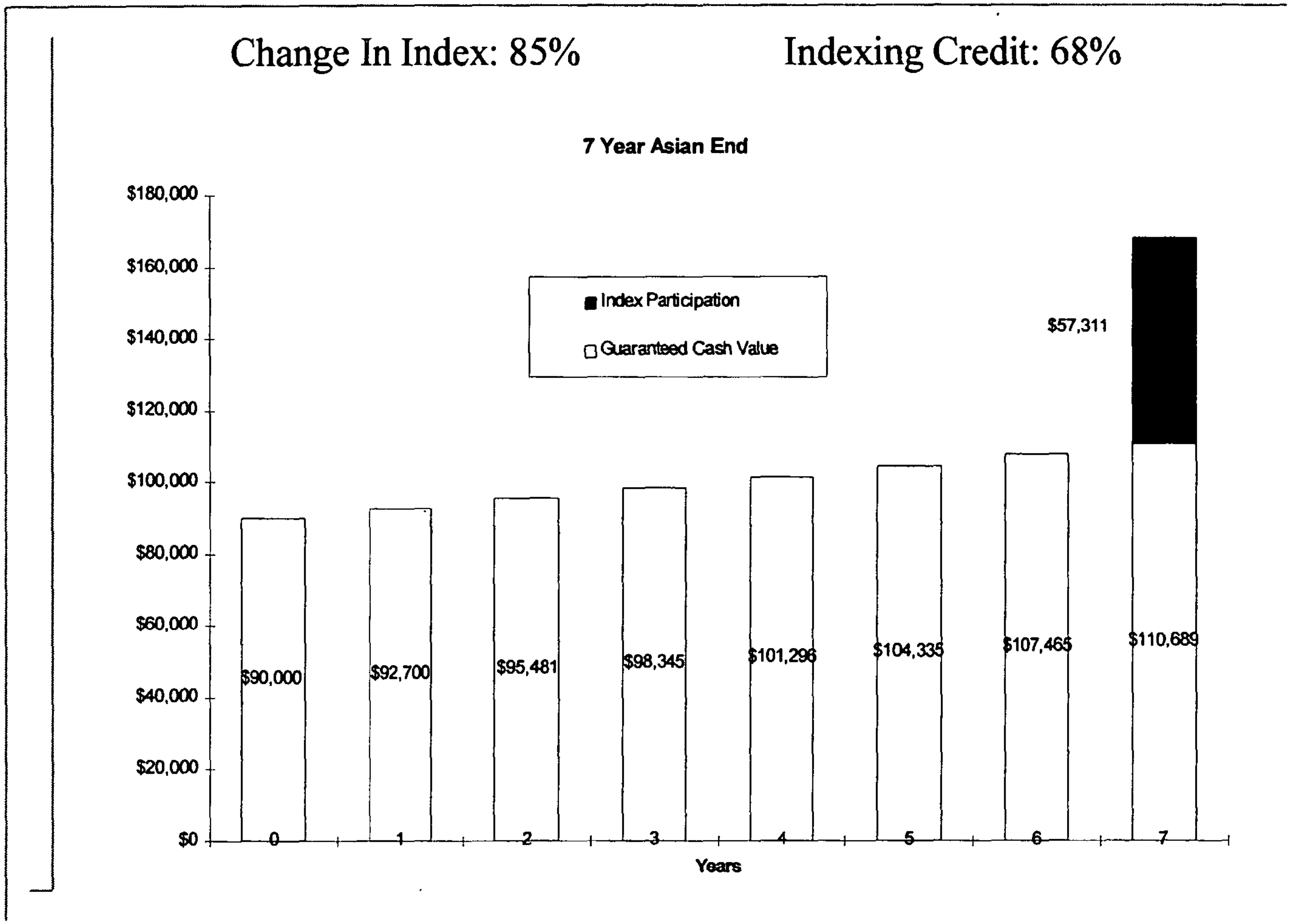
In terms of contract values, I've assumed an actual change in the index of 85%, which results in an actual index credit, which is the 80% times 85% or 68% (Chart 9). You have contract values that start out at $90,000, grow to $110,000, and at the end, which is the only time that the excess interest is credited, there's a $57,313 credit or payoff from the option, which is then added to the $110,000 that you have in fixed investments. This gives you a total contract value at the end of seven years then of $168,000, which equals the 68% crediting rate that you're promised on the index side.

TABLE 14
Pricing 101 -- A Conceptual Example
Initial Term Income Statement

Premium	$100,000	Fixed Investments	$ 67,814
		Marketing	7,000
		Issue	300
		PV Maintenance	344
		Option Cost	24,000
		Expenses	99,458
		PV Profit	542
Income	$100,000		$100,000

There are some things that you need to consider and worry about in developing and pricing an equity-indexed annuity. The first is that most of your assets are still invested inconventional fixed dollar investments, and you have all the pricing concerns and issues that you have with any fixed annuity contract that provides guarantees. Over and above that, you have equity index considerations, and these result from the design of the product and the funding of the product with derivatives. Specifically you can expect some additional costs. Three years ago there wasn't an administrative computer system out there that could do an equity-indexed annuity. There are some out there now, but even if your purveyor of systems has equity-indexed capability, with the tremendous variability that is out there, it's unlikely that they have exactly what your marketers want in terms of product differentiation. You have a policyholder service education in training issue and also an issue of variables. You have policyholder people who for the most part probably don't have a working knowledge of the S&P index and the equity markets. You have additional expenses there. You have some additional recordkeeping in terms that you've never had to track the S&P and the index. This will probably involve a licensing agreement with the owner of the index you use. If you create your own index, then you have to keep track of it. There's additional recordkeeping and expenses relative to keeping track of your equity index.

CHART 9
Pricing 101 -- A Conceptual Example



On the investment side, most life insurance companies have little or no derivatives expertise. You have to do some on the job training, which can be dangerous, so you have to go out to hire a body that knows derivatives, or you have to go out and contract for expertise in derivatives. Then when you own them, you have to monitor them, monitor the issuer, and periodically value them for your reserving.

In terms of some additional risks that you assume, you have the regular lapse risk, but you also have what I call an equity-induced lapse risk. If the market tanks, people are going to be unhappy, and they're liable to leave. With so little experience and no experience in a down market, we have no experience to predict what sort of an impact that will have on lapse rates.

You can find yourself in a situation where a customer has bought a product predicated on earning a fair rate of return over the equity markets, for which you would receive a very small guaranteed interest. The equity markets would go in the tank and the interest rates in the market would go up, so you would call it a double whammy, getting a terrible interest rate return in a high interest rate market and no prospect of recovering on the equity side. Plus, there's not a lot of experience out there with windows. The experience out there is what happened at the end of the surrender charge for a period on a fixed deferred annuity. We all know we get a significantly higher lapse. Now this is a much more predominant feature, and you're going to be possibly exposed to additional lapses at that point.

Field compensation on this contract has typically also provided for renewal compensation. Some of the compensation is the equivalent of first year on a renewal period, some is a little less, some of it is in trails. One of the things to watch out for, however, is you also have a coincident window at the same time, one you may be paying a commission and letting the customer out. I've seen one company solve that by delaying the renewal commission. It only becomes payable after the window has closed, which seems to be prudent.

There are also some risks in timing as to when you receive your premium and when you purchase a derivative. You want to be careful in making sure that, when you're establishing the customer's base S&P, you're also investing in the derivatives at the same point in time so that you're working from the same base, so that your assets and liabilities match in terms of the timing. You also have the timing issue on maturity: when does the liability mature under the contract, and when does the derivative mature under the contract? You also have a problem of derivative liquidity. Most of the options that are being purchased to back these products are what's called "over the counter" options, meaning they were created specially for you by an investment banker. There's not a ready market for them. The best market really for them is a buy back from your investment banker to whom you purchased it. There's not a great deal of liquidity on those options should you need to liquidate them to satisfy surrenders or deaths.

Finally there is a derivative credit risk, which is the person you bought the option from. Particularly with some of the longer-term options the going out is as many as ten years. What's going to be the financial solvency of the person you bought this from ten years from now? It's seen on Wall Street that sometimes firms do fall on hard times, so you have a credit risk on that.

There is some additional risk. What I really touched on is the equity asset and liability match, making sure that the equity portion of your guarantee to the customer is matched with the asset side. You also get into an issue of some secondary guarantees. If you provide your minimum participation in the S&P for the initial term, have you bought all the options or are you buying them year by year? If you're buying them year by year, what if the price of options changes, they become more expensive? You'll have a hard time buying those options at a price on which you can still make a profit. What are the implications regardless of how minimal for a lifetime, 30% minimum participation rate? In today's market, it doesn't seem like it's much of a risk, but it is a secondary guarantee, and you are on the hook for it.

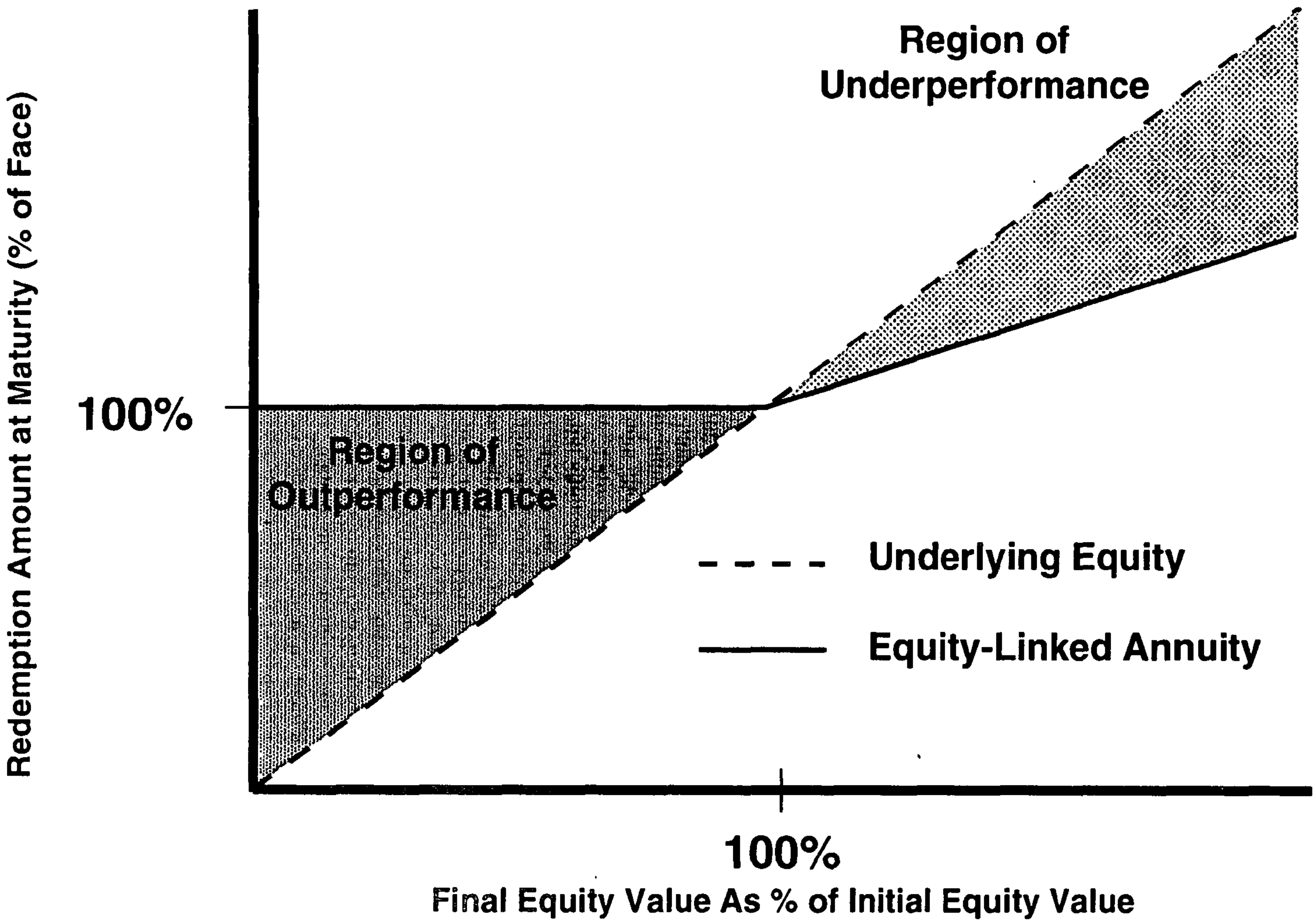
Another risk is the unknown and the unique. There are 50 some of these products out there, none of which are identical. Everybody is using just slightly different techniques, different crediting formulas, different averaging formulas. You have the vesting, the spread, the participation. Everything is unique and never been done before. There is a risk that, if you're not careful, you will introduce a financial risk into this product that's unique to your product and unknown to you. You should do a lot of thinking about what can go wrong, because if something can go wrong, it probably will.

An item not on the list, which is a relatively new risk and was alluded to in the general session, is the SEC. A few weeks or months ago, the SEC put out a notice. They are interested in equity-indexed products and are seeking comments. Personally, I suspect that the comments will result in promulgation of some rules. Where they're going to draw the line in the sand, we don't know, but you could potentially find yourself, if you're in the market, on the wrong side of the line, which would force you into registration or redesign of the product to meet the line in the sand so that you're not a security and not required to register. If you're required to register, you have a big additional expense of registering the product with the SEC, and depending upon your field force after you register it, you may have nobody left to sell it. There is no guarantee that the existing products out there might get grandfathering.

On that note, I will turn the podium over to Greg, and he can talk to you about option strategies.

MR. HENKE: I want you to get a feel for what equity-indexed annuity returns look like graphically (Chart 10). We're showing equity returns on the x-axis and product returns on the y-axis. The 45-degree angle dotted line is what you would get if you bought equities. In other words, you're going to have a one-to-one return as the equity market goes up or down. With an equity-linked product, you cap your downside. As equities lose value, this product is going to provide a floor guarantee so you at least get a return of principal and maybe even a modest interest component. If the equity markets do well, you'll see that you will share in some of that participation in the product, but probably not to the extent that the underlying equities perform by themselves.

CHART 10
Typical Equity-Linked Annuity Return Profile



If you want to create an investment strategy that has a flat area to the left, and as equities do better has some appreciation, there are several different ways you can get there. The level line on the chart represents fixed-income return and is not correlated to the equity return. If you buy a zero-coupon bond, for example, you know what it's going to be worth at the end of a defined period, and that value is independent of how the equity markets actually perform.

Next we illustrate a call option that is at the money. As soon as the equity market starts to have positive returns, it starts to give you some positive value. If you add those two lines together, you basically get the shape of an equity-linked annuity or equity-indexed product.

Chuck mentioned that most companies are pursuing that type of investment strategy where it's fixed income, plus some type of call option. I think it's good to look at another way to create that profile. What you can do is buy the underlying equity basket and create your 45 degree line. What you need to add to the equities is some type of floor over here. The way you would do that is to buy a put option. The put option obviously goes up in value as the equity market does worse, so if you would add that to the equity line itself, you're going to create a floor at 100%.

A capped equity-linked return is slightly different. The line starts at the 100% level, increases over a range, and then levels off at some point. It looks just like a regular equity-indexed annuity, but as the equity market does real well, you eventually sell off the rest of your upside. The investment strategy for capped products usually starts with a fixed-income component which provides your minimum guarantee. Again, you add an at-the-money call option, which is going to give you the upward slope as equity starts to perform well. Finally we introduce an out-of-the-money call option, which you're actually going to sell, and that's part of how you're going to pay for the at-the-money call option. When you put it all together, you get back to this type of profile where you have some participation until it's capped at this higher level.

A lot of people are looking for a free lunch when pricing options. They price these options endlessly looking for something that is too good to be true. Step back for a second and think about put-call parity. If you buy a stock and you also buy a put, you've bought protection in case the value of that stock goes down. If you sell a call, you give up the upside on the stock and what you now have is a risk-free or fixed-income profile. The way people usually see put-call parity is the stock plus a put equals the fixed income plus a call. The point here is that exchange-traded options are all very efficient. You're not going to find a free lunch in any of these things, and as a good pricing exercise, you should be able to put them back together and test whether or not put-call parity holds. In other words, does your pricing add up in an arbitrage-free environment?

When you actually go to execute a transaction, then it's good to check relative pricing. There was an article in the *Wall Street Journal* showing how some index funds were outperforming their indexes. When they go to purchase, they do look at the futures price versus the cash markets. They trade in huge volume, they're very efficient, and they will pick apart two basis points' discrepancies. I don't think that's the kind of arbitrage that most insurance companies can effectively implement. Instead, I would suggest that you concentrate on the economics, e.g., what looks sexy to your marketing people, as opposed to looking for a free lunch in the world of options. Product design should be driven by the accounting, risk management, and marketing considerations of your organization, not on finding mispriced options.

Let's look at an accounting driven example. I'm going to look at a five-year product with a minimum guarantee of 90% accumulated at 3%, so we know we have a guaranteed value of 104.3 cents on the dollar at the end of the five-year period. If we look at how much fixed income we need to meet that guarantee, and if we assume that the market rate today is 7%, we need to set aside 74.4 cents on each dollar of premium to fund that guarantee. What you have left is 25.6% of the premium to buy your protection and provide a profit.

You have to determine whether options are permissible investments and whether they are admitted assets. As we get into other structures, the answer might not be so obvious. If these equity options or derivatives aren't admitted, you will lose that amount of statutory surplus. In this example, your statutory loss would equal over 25% of premium, which is a surplus hit that most companies would deem unacceptable.

Let me give you another example where the accounting ramifications outweigh the derivative pricing. Assume you have a fully hedged point-to-point, equity-linked annuity. Let's say the minimum guarantee for cash surrender value purposes is this 90% accumulated, 3% type rate. I'm not a tax expert, but you could argue that no matter how high the equity market goes up in the interim, there's always a chance that equity markets will crash prior to maturity. Therefore, the only guarantee you have that you can recognize for tax reserve purposes is this 90% accumulated at 3%. Let's pretend in the first year you bought one-year call options to hedge your risk, and they pay off. The equity market is up 20%, and you're perfectly hedged economically. The problem is, if you recognize the call option/return as revenue, equal to 20% of premium, but you're not allowed to recognize an offsetting deduction for tax purposes, you generate taxable income of 20% of premium. That will reverse in time, but obviously that's a big difference to overcome.

Now I'll give you an example of what I call a risk-driven example which Chuck alluded to as well. It's counterparty exposure. To put things in perspective, more companies are getting comfortable doing interest rate swaps. Here we have a seven-year, fixed-to-floating swap. If interest rates move 1%, forgetting discounting, you're going to have a counterparty exposure of 7% one way or the other. Compare that to an equity-linked swap. If equities move 50% (we know that's possible, it's happened over the last couple of years), you would have a counterparty exposure equal to 50% of the notional amount of the contract. If you have a long-term product, and you're doing a lot of your hedging with one counterparty, it can create a substantial credit exposure. To make things worse, an insurance company is probably always in the position of buying equity exposure through options. So it's not like you have an offsetting or netting position. You're constantly adding to that exposure as you go out to hedge this product.

What are some of the structuring levers? Chuck has mentioned a lot of these, but I'll run through them again with regard to what they do to the option pricing and derivative pricing component. The first lever is maturity. The longer the maturity, the more participation you could buy which comes from two factors. One is the fact that your minimum guarantees are less than market interest rates, so you don't need as much fixed income exposure to fund out the guarantee, and you have more left to buy options. The other is, since most of these products are on indexes that don't include dividends, the phantom dividend difference builds up over time. So the longer time you have, the more money you have to fund participation. The second lever is the level of the guaranteed returns. The lower the guaranteed rates you have, the less fixed income exposure you need, and the greater participation rate you can offer.

Next is the equity conversion premium. This is how much you want the option to be at-the-money versus out-of-the-money. I think Chuck referred to it as spread in his analysis. I haven't seen a lot of companies utilize this. For most companies it's easier to explain that you'll get some participation from equity from their first dollar of positive performance, but one of the ways you can buy more participation is to actually start that equity participation after some positive return in the equity market.

Averaging features increase participation rates by using Asian options, where the payoff might be based on the last six months or the last 12 months of the product. Clearly that option has less average maturity than the option that just pays off at the end. Since there's no equivalent discounting for interest, and since all the payoff is still at the end, it increases the participation ratio that you can offer. You can also base average price equity exposure on different time periods including yearly or daily. Again, as you introduce multiple check points, you're reducing the volatility and the time of the option exposure, and you're able to buy more participation rate for the same price.

What are some of the underlying equity securities people are looking at? Obviously the S&P 500 is the most common one today. People are also experimenting with stock baskets, customized indexes, technology indexes, and even single stocks. There's also a lot of interest in emerging markets and other foreign indexes.

A couple of things to keep in mind here is the more volatile the equity basket, the more expensive the options are, and in a sense the less participation that you can offer. The other component is, if you start to deal with less liquid equity baskets, there's more friction cost, and put-call parity is more difficult to exercise. People are putting some of their own risk capital to work by writing options on illiquid baskets, so you'll probably get lower participation rates for the same option premium as you deal in less liquid securities.

There are a lot of different ways you can implement these hedging programs. We'll drop them into three basic groups. The first one is to say that you don't want to manage any of the investment risk, and you are going to purchase both the fixed income and the equity component. You can either do that by having somebody else manage the assets or by doing some type of reinsurance transaction where you're really doing the same thing. The second one is a partial offset, and I think this is most common today, where you're going to manage the fixed income yourselves, but you're going to buy the equity hedge. You're going to buy one customized equity hedge that exactly matches the product characteristics that you have. The third one involves a lot more work, but you can reduce your credit risk by using listed futures and options to manage your hedge internally.

The direct offset relieves the company of worrying about any of the investment management aspects of this product. It allows them to focus on product distribution. The negative of that is they don't get to outperform on the investment side versus their benchmarks. The next method, the partial offset, is the most common. The equity exposure is directly offset through some type of customized option specifically designed for their product. Insurance companies are good fixed-income managers. They can continue to do that and hopefully get some additional performance through their fixed income management. The negative of that is the counterparty exposure that you're building up as you buy these customized options.

Finally, you can use futures and listed options. That way you really don't have credit risk against the counterparty; you have it against the exchange, which is not a concern. The problem with this method is that it is a complicated process. It definitely requires having trading infrastructure in place, and that involves people, systems, and pricing technology. That can be a rather expensive undertaking.

In a typical example, let's say an insurer is looking to purchase a customized equity hedge. How do they go about doing that? They are going to invest in fixed-income products just like they normally would, and they're also going to go out and buy a customized equity hedge. All that is done between the insurer and their counterparties, and the insurance customer receives the equity-linked annuity profile from the combination of those two investments.

There are two basic ways of paying for that hedge. The first one is just to pay an up-front premium, just like you would for a call option. For example, 25% of the premium amount might go towards purchasing equity options up-front. Another way to do that is to finance the purchase. The way it's typically quoted is instead of paying that 25% up-front, you would actually enter into a swap where you might agree to pay the London Interbank Offered Rate (LIBOR) minus 200 basis points on a semi-annual basis, in exchange for that same equity option. I think this does a couple of things that appeal to insurance companies. One, you have less credit exposure, since you still have payments that you're going to be making to your counterparty. Those could be netted if there are any credit problems. The second one is it tends to fit insurance pricing and accounting methodology a little better. If you're managing a pool of assets and your goal is to earn LIBOR plus 50, you know that your option cost is embedded in paying off the spread of LIBOR minus 200. If you achieve your investment objectives, you should be recording this level 250 basis point spread that will pay for commissions, expenses, and other costs, as well as your profitability.

Finally, I want to give you an accounting update. The Financial Accounting Standards Board (FASB) just came out with another draft of their derivatives accounting project. In it, they specifically said that they expect equity-indexed notes and equity-indexed products to be accounted for using a derivative approach. What I mean by that is they want you to separate either the asset or the liability into its two components, one being a fixed-income component and the other being a derivative. In the case of an equity-linked liability, they want you to look at two separate products.

One is a fixed-income product, and one is a call option that you have sold. The reason you need to be careful is, since you're accounting for that option as a derivative it is marked to market for income purposes. Unless you match things up, this could cause earnings volatility.

On the asset side, FASB has been working on equity-linked investments for a while. When you used to buy an equity-linked index note or trust, income was largely deferred. Emerging Issues Task Force 96-12 came out late in 1996. It said we don't want to wait until the end of the investment to true-up income, so we'd like you to look at these assets on an interim basis. For example, if you own an equity-linked note, and the equity markets are up substantially, they want you to reproject and start taking some of those gains into income. This provided income relief to people who were buying these types of securities. This latest derivative announcement asks for a completely different accounting method. It's very hard when you're selling long-term products, to develop an optimum strategy to fit your accounting needs when the rules seem to be in a state of flux.

Tax is another area where accounting for the instruments has changed recently. Equity-indexed notes have been used by some insurers to back equity-indexed products, especially if call options are not admitted on their balance sheet. Previously if you weren't receiving cash coupons, you weren't incurring taxable income on equity notes. Now you have to accrue a current taxable yield regardless of the payout design, and the rate will be based on the issuer's normal financing cost. If instead of buying notes, you shift over to a trust structure, you may reduce taxable income below the implied note yield. You could still have that trust in a principal protected framework for statutory and generally accepted accounting principles (GAAP) purposes, but for tax you would treat it as a partnership. This is another new development that you have to keep your eye on as you're considering all these alternatives.

Finally, keep in mind the dividends received deduction (DRD). If you're buying instruments with embedded options where the dividends are buried, there is no DRD. If you are an investor that can take advantage of the DRD, you might want to consider using another format, so you can look through to the actual dividends and possibly improve your tax position.

All these issues make it difficult today to sell a non-registered, point-to-point product. I think point to point is the most elegant structure, and I think it meets a lot of consumer needs out there, but all these difficulties are pushing us to annual resets, high water marks, and even registered products. With all the uncertainty, I'm sure we're going to have more surprises, so good luck.