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Session 59 PD Reserving Issues for Variable Annuities

Track: Financial Reporting

Moderator: VINCENT Y. Y. TSANG
Panelists: BRADLEY E. BARKS
ERROL CRAMER
JOHN O. ESCH

Summary: Panelists discuss guidelines and regulations governing variable annuities, reserving and reporting requirements of Guideline MMMM, Commissioners Annuity Reserve Valuation Method (CARVM) and implications on asset adequacy analysis. Attendees gain an understanding of the various reserving and reporting requirements for variable annuities, including statutory and GAAP methodologies.

MR. VINCENT Y. Y. TSANG: I'm a life actuary working for PolySystems in Chicago. Today we have three experts on reserving for variable annuities on our panel. The first is Errol Cramer. Errol is the chief actuary of Allstate Financial with 25 years of experience as an actuary, 18 of them with Allstate. Errol has been actively involved in actuarial industry activities such as financial reporting. He is also the past chair of the Actuary Symposium and currently serves on the Academy of Life Financial Reporting Committee and ACLI actuarial committee. Errol will talk to us about the statutory issues that are facing the variable annuities.

Our next speaker will be John Esch. John Esch is the senior manager of Deloitte & Touche in the Minneapolis office. John's expertise includes financial reporting as well as modeling. John will talk to us about GAAP reserving for variable annuities, with special emphasis on the recently adopted statement of position (SOP) on nontraditional long duration contracts.

Our third speaker is Brad Barks. Brad is the CFO of Global Preferred Holdings in Atlanta, Ga. Brad is not just an FSA, he is also a CPA. He worked for Deloitte &

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Touche for 10 years, and then moved to Life USA for another 10 years before he moved on to Global Preferred Holdings. Brad will be talking about variable annuities as well as some of the most recent issues related to sales inducement in the SOP.

I will round it out by discussing how this reserving methodology will affect you from pricing perspectives, as well as talking about the most recent revenue ruling from the IRS on Actuarial Guideline (AG) 33 and other rulings that may be affecting the reserve methodology for variable annuities going forward.

MR. ERROL CRAMER: I've been involved in the annuity valuation for essentially most of my 25 years of practice here in the States. I'll be talking on statutory reserving. I'd like to go through some of the chronology and talk about where we are today.

The first of the two main principles CARVM is the concept of greatest present value. That often gets much bandied around. One often considers that the greatest of all benefits, but that's not really true. There's a second piece. It's the greatest present value of guaranteed benefits—not potential benefits. It's very clear CARVM is the present value of guaranteed benefits only.

There's a minimum reserve. Any contract by definition is going to have guaranteed terms. To be a contract, it has to have something contractual. A guaranteed term, though, is not the same as a guaranteed benefit. The guaranteed benefit is an assurance that as long as the company is solvent you will get the benefits. For variable products, it's if funds are in the separate account. There is no guarantee. There's a prospectus. While it is very improbable and implausible you can lose your entire principal. Therefore, under a very conservative definition of CARVM for variable annuities, the reserve is defaulted to the current cash surrender value. Depending on how you apply continuous or curtate CARVM, a minimum reserve may not be significantly more than the current cash surrender value.

About 15 years ago, there were a lot of companies taking the position of holding cash surrender values as statutory reserves for variable annuities. For others, they needed some guidance, which normally comes through as an actuarial guideline, such as the NAIC AG.

I'd like to cover three guidelines. First is AG 13, which addressed the rights of the policyholder to transfer funds from the variable account to the fixed account. This has implications for waiver of the surrender charge. If the general account has a bailout provision, insurance companies have to calculate statutory reserves assuming a zero surrender charge. Or, more specifically, the amount of surrender charge is recognized to the extent of having a possible transfer. If there's a 25 percent limitation on the money that you can transfer, insurance companies would have to assume that 25 percent of the surrender charge could be waived due to transfer of funds from separate account to the general account.

If policyholders could transfer the remaining 75 percent of funds one day later, insurance companies would ignore the possibility because nothing is guaranteed. AG 13 was very specific and did bring out the concept that insurance companies have to consider the ability to transfer funds between general and separate accounts. That will become a little bit more important later, as we talk about further developments.

There was a proposed actuarial guideline, AG VVV, that was never adopted. It did, however, introduce a concept that became generally accepted for determining the assumed credited rates for variable annuities. To the extent there are guarantees as to maximum mortality and expense charges and other policy loads, the valuation interest rate is a proxy for the assumed earned rate and, the assumed credited rate is the valuation rate minus the sum of mortality and expense (M&E) charges and other asset charges. There was a little discussion over the application. How do you determine a net reserve versus a gross reserve? Should you now form a maintenance expense within the charges? Could you allow the charges to be covered elsewhere? Should you use continuous CARVM? Eventually the guideline collapsed under all the discussions.

To give a very concrete example: If you have a 10 percent surrender charge and you're two years from the end of the surrender charge period, and if the maximum annual M&E charges you can collect is 125 basis points, then you have about 250 basis points that you can recover in the next two years. So the cash surrender value might be 90 percent of the account value, but the minimum reserve would be closer to 97.5 percent of the account value.

The next guideline, AG 33, doesn't have any specific provision regarding variable annuities. This guideline is a general CARVM clarification for annuities with multiple benefit streams. CARVM has always required that one consider the greatest possible guaranteed benefits. There was a need to classify benefits into elective and nonelective benefits. The death benefit obviously is usually a nonelective benefit. Partial withdrawals are usually an elective benefit although it may be nonelective. There was some relaxation of what might be termed nonelective.

AG 33 works with a variable annuity up to the extent that the guaranteed death benefit is the account value. So if there is a waiver of surrender charge on death, you can apply the AG 33 principles to the variable annuity and come up with a reserve. However, problems occur when the annuity contract has some enhancement of death benefits beyond the return of the account value alone.

Figure 1 shows details of AG 34, which changed CARVM from greatest present value of guaranteed benefits to greatest present value of integrated benefit streams. Very broadly, the reserve is the greatest excess of any of the integrated reserves over the AG 33 reserve. So while insurance companies calculate the 33 reserve based on any of the guaranteed benefits separately, which for the death benefit would be waiver of surrender charge. If nothing else is guaranteed, the alternate AG 34

calculation would come up with a reserve that may be either higher or lower than the AG 33 reserve. If the alternative reserve is lower, insurance companies cannot hold a negative reserve as reserve can only be positive or zero. The AG 33 reserve calculation never exceeds the account value, which is held within the separate account.

CARVM expense allowance is the difference between the calculated reserve and the full account values. The minimum guaranteed death benefit (MGDB) reserve is a reserve held in the general account because policyholders have an enhanced benefit beyond merely a return on account value.

AG 34 covers various benefit streams. The one that we care about the most is the A Stream, which is the death benefit stream with death benefit exceeding account value upon death. The B and C Streams are the base benefit streams for cash surrender, as well as the waiver of the surrender charge or payment of the full account value upon death. Those can generally be considered as one benefit stream in a calculation. The A Stream is very different, because it has a drop and recovery methodology. The drop and recovery percentages of the contract depend on the type of invested assets and the fund mix as of the valuation date. There are five categories of assets and every category has its prescribed drop and recovery rate.

That could potentially create a situation where, as of the valuation date, there may or may not be a net amount at risk. In other words, if the insured died, the death benefit payment is the account value. But because of the drop, it creates a net amount at risk. Together with the drop, there's a recovery rate, which is the assumed annual growth rate every year thereafter. The B and C Streams do not use drop and recovery. They're very de-linked benefit streams that you cannot really look at on an integrated basis, even though the terminology used is of integrated benefits. It's really a proxy type of calculation for saying to the extent there's an enhancement to the death benefit. There seems to be something of value there. It's not quite guaranteed, but it creates this proxy. Let's assume things drop, then they're recovered and you have a little bit of exposure, it's a pragmatic calculation exercise to come up with the reserve.

One of the issues is what do you do about possible withdrawals or annuitization? In the B and C Stream, it's very clear that those get considered just like they would in an AG 33 calculation. For the death benefit stream, it's not as clear. If you read the text of AG 34, it seems to imply that you do not consider any withdrawal. You do the calculation as a proxy calculation. Drop creates a net amount at risk, and recover reduces the net amount at risk—for contracts that stay in force. Some feel there should be some internal logic or connection that if people withdraw in the base B and C Streams, they should withdraw in the A Stream. So in theory, you could have a positive value in one case and a negative in another case, because they are just different streams of projected account values.

The other difference is in the fund transfer. In the B and C Stream, again AG 13, if

you have waiver of surrender charge in the general account, you have to assume or consider the possibility that people move the funds into the general account and then withdraw in order to avoid the surrender charge. For the A Stream, it's very clear in AG 34 that you cannot and must not assume transfers of funds. That has implications regarding the amount of the drop and a subsequent recovery. So again, they are very de-linked calculations.

The fourth item has to do with the mortality table. When doing the AG 33 calculation, there's a prescribed annuity valuation mortality table just like other annuities. For AG 34, there's a special table—the 1994 VA MGDB mortality table—that definitely has to be used for the A Stream. Essentially it's a 1994 valuation table with a 10 percent margin added back to the mortality. The important thing is that, even if the valuation table were to change, the prescribed table for the AG 34 calculation does not change. It's hard-coded in the guideline.

Should one assume the same mortality for the B and C Streams or should one use the AG 33 valuation mortality table? Actuaries have different opinions and practices vary. Some like to calculate the B and C Streams using methods consistent with the AG 33 calculation because it avoids having a two-part calculation: doing your AG 33 base and then doing this integrated reserve, coming up with a new calculation and comparing the two. They are trying to do a shortcut and make the B and C benefit streams equivalent to those for AG 33. They need not be the same. The B and C Streams may differ from those for AG 33 base reserve, because the integration included in AG 34 specifically relates to the duration over which you add up the A, B and C Streams. So you may find that the greatest value for A Stream is at duration N, and the greatest present value for B and C Streams is at duration M. Although AG 33 could be a different calculation or at a different duration, you wouldn't determine the present value of the A Stream at a different duration. All that is a somewhat complex calculation methodology.

Let's now look at some of the considerations. Although it is not stated in AG 34, I and many others regard AG 34 as an interim solution, there is movement now to completely rewrite or revise the CARVM for variable annuities. Even within the text of AG 34, it says AG 34 may not be appropriate. So you cannot rely on AG 34 as the only way to calculate the reserve. An enhanced earnings benefit generally has a stepped-up death benefit to cover the estate tax so that policyholder may realize the asset appreciation tax-free. Obviously the death benefit may go down. If there is a drop in fund value, the drop recovery methodology just doesn't seem applicable to valuation of enhanced earnings benefit guarantee. So one still has to use judgment. You cannot just rely on AG 34. It is not the same as the CARVM and is not the valuation law. It's just a guideline. There are other issues to consider. Those of you that have blocks of variable annuity business would have experienced the extreme volatile income and surplus swings, because the calculation is based on the fund values as of the valuation date.

In addition to doing the formula calculation, you still need to make sure that the

reserves are adequate. Now reinsurance is covered in AG 34, and those reinsurance cash flows are incorporated in the calculation. You also want to look at your expected versus valuation mortality, because there's likely to be a margin there. For cash flow testing, you might want to look at fund transfers to understand that people move money to safer money market and other accounts. It's likely that those recover and that you grow out of your net amount at risk.

Another issue that has gotten a lot of press lately is the dollar-for-dollar partial withdrawal stripping. Figure 2 is an example with a return of premium, where the current premium is \$10,000 and the account value is \$8,000. This could be a newly issued policy with an immediate drop. It doesn't have to be a policy that's heavy in the money. The net amount at risk was \$2,000. So if someone put in \$10,000, you assume it has dropped to \$8,000, and if someone dies they get \$2,000. There has been a projected growth of that underlying \$8,000. Eventually, once the \$8,000 grows beyond \$10,000, there's no net amount at risk. So you're only on the hook if someone dies while there's a net amount at risk. If someone withdraws \$7,500, the premium now is \$2,500. The account value has also dropped by \$7,500 and there's \$500 left. Under a dollar-for-dollar calculation, the net amount at risk for the policyholder would be \$2,000 (that is, difference between the premium and the account value). So the net amount at risk if the person immediately dies is unchanged. But the \$500 is unlikely to grow back to \$2,500. It's got to quintuple. So it leaves permanent net amount at risk of \$2,000. There are a lot of policy provisions that allow for proportionate reductions. So if you took out \$7,500 of your \$8,000, your \$2,000 net amount at risk would drop down proportionately to \$125.

The industry experience to date has been that this type of partial withdrawal stripping has been minimal, generally around 1 percent. Although some companies have reported that this type of partial withdrawal may get up to 3 percent at times. In theory, someone could strip out the cash, leave the net amount at risk, and almost get free insurance. It's not quite free, because you still have to leave your base policy with whatever the minimum policy amount is. But there are various financial reasons why someone may not want to strip. If someone is young and the policy has a benefit that matures at age 80, they may not perceive the death benefit as a valuable benefit. If they strip, they may have a different tax basis than if they decided they want to take the money out and get a tax deduction for a realized loss. If you still want a variable product, you are probably not going to want to strip. If you strip out a piece of the policy and move it elsewhere, M&E fees go up, possibly doubling or more. So you end up with the same benefit, but pay more.

Also, there are combinations where the base return of premium benefit is dollar for dollar. That happens to be the one that's heavily in the money now. Although, if you strip out your return of premium benefit, often your enhanced death benefit may be proportionately reduced. So you've just taken out the vast majority of your enhanced death benefit. That's one reason why one would really not want to strip under these conditions. Although this theoretical issue was raised by the New York

DOI. There was also a *Wall Street Journal* article that presented this issue in a way that seemed to say that you should strip in this situation. It is a very naïve article, but there was concern that suddenly there would be a rush of people stripping.

When the New York DOI raised the issue, a lot of people misinterpreted the New York response to be that you are required to consider all potential benefits in such a way that somehow you have to assume a dollar-for-dollar stripping. So if you newly issue a VA, you have a 20 percent net amount at risk. The present value of that free death benefit is 15 percent, so the whole 115 percent of the account value is a reserve. I don't believe New York ever said that. They just raised a technical issue that this is a benefit that somehow seems like it should be considered. But there's been a lot of confusion in the industry. Some auditor is going to go through his customer cards and say you need to go to your home state and get approval to do whatever you've been doing all these years, even though you've been examined. The state is saying they'll put a moratorium on this requirement. The industry is putting out response that says it's a misinterpretation of the law, it's not the requirement. Unfortunately, the way the guideline was written, it's not very clear, so there is a little confusion. But they do want the NAIC to clarify that it isn't required.

AG 39 is the next guideline that came out, and it deals with guaranteed living benefits. It was specifically presented as a sunset ruling. It actually expires on January 1, 2006, so it's very much an interim guideline. It requires accumulating the charges for variable annuities with guaranteed living benefits (VAGLB) as a minimum reserve. Also, doing reserve adequacy becomes part of the base reserve, which leads to a host of interpretation issues regarding deductibility for tax reasons. But an interim solution should at least have something. There really isn't anything guaranteed, but there is a benefit of some value that should have some reserve.

The RBC C-3 Phase Two Proposal will determine what the RBC requirements should be by performing explicit cash flow testing. The same methodology could be carried over to the upcoming new VA reserving methodology, but there are still a lot of technical issues. It's not as simple as going from RBC to reserving. Tom Campbell who heads up the American Academy Work Group welcomes any comments or responses.

To conclude, it has to be a guaranteed benefit to be included in CARVM. There are some interim solutions, but a more robust solution is being developed. And the bottom line is to use sound actuarial judgment. Thank you.

MR. TSANG: Thank you, Errol. The next speaker will be John Esch, who will talk about the GAAP reserve and the recent Standard of Practice (SOP) on the guidance.

MR. JOHN O. ESCH: I'll go through a brief description of some of the GAAP guidance that's out there to give you some historical perspective. I'll also talk a little bit about this SOP, which will be effective starting in 2004. I'm also going to

highlight one of the changes from the exposure draft to this SOP. Then I'll talk about the guaranteed minimum death benefit (GMDB) reserves. Lastly, I'll go through some considerations of some specific benefits.

For the GAAP guidance, first of all, there's the Statement of Financial Accounting Standard (SFAS) 60. In SFAS 60, there is a specific paragraph that talks about how to determine the liability, the GAAP benefit reserve. That, of course, preceded SFAS 97, which most companies use as the model for accounting for variable annuities. SFAS 97 basically says that you hold account value, and you really can't consider any additional benefits. There's one paragraph in SFAS 97 that you might be able to interpret as a way to include additional reserves for these GMDB benefits, but it's a very creative interpretation.

Then there was the exposure draft and then the draft SOP. I'm referring to it as SOP 03-n, which I'm not sure is the correct number, but that's the normal format for these SOPs. The SOP began many years ago. In the SOP, it's fairly clear what needs to be done, at least at a conceptual level.

What is in SFAS 97? As I mentioned, there's this paragraph 17, which talks about the liability being a policyholder account balance. But it really does not address in any way the additional benefits that arise from, for example, GMDB. Current industry practice has been inconsistent on this issue, from some companies that hold no additional liability, to other companies that hold an AG34-type liability, which can be a significant number. There is also a wide range of things in between.

The FASB doesn't like such diversity in practice. That's one of the reasons this SOP is out: to address the diversity of practice and try to get everybody on the same page, every company following the rules the same way.

So a nontraditional long duration contracts task force was formed. As a part of this task force, they tried to address all sorts of issues that we're facing in the industry, one of which happens to be the variable annuity reserves.

I'd like to summarize the topics that are covered in this SOP. There are some separate accounting points, not actuarial reserve related at all, but actually pretty important to the accountants. There's also a section that talks about liability valuation. This updates the SFAS 97 definition of what the liability is. Then the two sections that I will focus on: determining the significance of the mortality or morbidity risk and how to apply the accounting for those benefits. The next point is the annuitization benefits. There was a laundry list of things included in this SOP, but only a couple of them refer to variable annuity reserving. And as I said, it has been adopted and is effective for fiscal years after this year-end.

I think one of the more interesting aspects is seeing the development of the exposure draft and the task force action. The initial exposure draft said you do not accrue an additional liability for these annuitization benefits, whether it is a GMIB or

a two-tier annuity. These are separate contracts; you can't accrue for them. They held to the letter of the law. The exposure draft drew quite a few commentary letters, many of which vehemently opposed this view and said there are all kinds of reasons why you should accrue an additional liability. As a result, the Board reversed its position. Now in the SOP it says you must consider the annuitization benefits and it includes an explanation of how to go about doing that.

So it does matter that you send in your commentary letters. They can have an effect. There was quite a groundswell of support for annuitization benefits. In particular, company actuaries thought it was prudent and that the benefit was there. They made a good case of saying that the products that we're selling today that have these significant features are not like the products that were sold when SFAS 97 was created. That didn't really contemplate these types of benefits. And yet, we don't have the accounting to do that. So they reversed their position and most people are happy with that.

The method that they came up with should give a zero additional liability for the more traditional deferred annuity contracts, which have a more normal annuitization benefit attached to them. It's really geared to those products that have a jazzed up annuitization feature.

As far as GMDB reserves are concerned, one of the first things that's done in determining which accounting model applies is classifying your products. This goes on in many of the SOPs. As an example, SFAS 60 talks about short-duration versus long-duration contracts. SFAS 120 focuses on participating business. SFAS 97 is about investment contracts, UL-type contracts, and limited pay contracts. What this SOP talks about is classifying your products as either investment contracts or insurance contracts.

As I mentioned, the product classification is an important thing. It's required to be done at contract inception or, in this case, upon adoption of the SOP. Upon adoption, you'll need to reflect what has actually happened for contracts that are determined to have other than nominal mortality risk. The SOP doesn't really tell you what "other than nominal" means, or what "nominal" means. That's left up to judgment. Additionally, the SOP doesn't tell you how to go about determining this mortality risk test. You need to consider both the frequency and the severity under a range of scenarios. It doesn't tell you that you have to use stochastics, it doesn't tell you that you must use deterministic, but it lends itself to read that a stochastic approach is probably a good way to go.

A couple of the product design features here are what I call a simple return of premium benefit. Who would have thought that this would be a benefit or a product feature that would draw any interest at all? If anybody sold any variable annuities in the last three or four years, particularly I guess in 1999 and 2000, you will see that the return premium is a significant benefit.

The rollup is a benefit that most of us would guess to be a pretty significant feature, and the reset is probably in between. Figure 3 shows the calculation made using a benefit ratio technique, which is a blend between SFAS 60 and SFAS 97. It uses the unlocking or the updating with current assumptions, which is a concept in SFAS 97, and it uses the benefit ratio, which is a concept in SFAS 60. We're not talking about reverse select in ultimate universal life (UL). We're only talking about variable annuities. But again, that is an example where the SOP talks about fees not being proportional to the risk involved. That's where we trigger this GMDB calculation. Additionally, the change in the liability is reported as part of the benefit expense.

As we discussed before this sample calculation, the process is to project your benefits in excess of the account value, project your fees and spreads. You obviously need to consider some of the severity and frequency. At least consider whether you need to re-project under new assumptions. You'll update your benefit ratio and then go through your calculation.

One of the specific benefits we've talked about is the GMBD. If you determine that it's other than nominal and is classified as a UL-type contract, then you need to follow this additional liability. If you determine that the risk is nominal, and it's an investment-type contract, then no additional liability is accrued and it's just a simple pay-as-you-go. The guaranteed minimum accumulation benefit should follow SFAS 133, and the earnings protection benefit should follow the same logic as GMBDs.

As I mentioned a little earlier, the GMIB follows the exact same methodology as this benefit ratio technique. So you've got methodology that's similar for the GMDB and the GMIB. In most cases of the traditional-type annuities, where the annuitization benefits are not significant or are more the guaranteed type, you should end up with a zero liability.

MR. TSANG: Thank you, John. Our next speaker is Brad Barks, who will talk about the variable annuity DAC.

MR. BRADLEY E. BARKS: Thanks, Vincent. I'm going to talk about the financial results in 2002 and about how the impact of the current equity market is affecting deferred acquisition cost (DAC) amortization for a number of companies and, in general, compare some methods. Also, I'm going to just touch on the sales inducements portion of the SOP that John Esch talked about, because there weren't many changes there. Then I'll discuss the new SOP on internal replacements.

Figures 4 and 5 show spreadsheets that I put together of information from public documents, namely 10Ks and Form 20-Fs for the foreign companies. There were some big hits, but in general the percentages of total DAC for the companies was less than 5 percent, with a couple of exceptions. Allmerica was getting out of a line of business, so they had a very large hit. But in general, for as bad as the market

is, the hits may not be as bad as we thought they were. With regard to the equity markets and the volatility, if you want to look at how the methods work, there's a good article in the December 2002 *Financial Reporter* that discusses the different methods.

First of all, we're going to look at the equity markets. I've taken the S&P 500 Index from 1950 to 2002, annualized the returns and categorized them into 5 percent buckets—zero to five, five to ten, ten to fifteen. Figure 6 represents the three-month annualized return. Again, you take the three-month return and annualize it, starting at the first of each month over that period of time. Figures 7 through 11 are for one-, three-, five-, seven-, and ten-year annualized returns. All the graphs are on the same scale, so you can get a feel for what we already know: Short-term volatility is very high; long-term volatility gets much lower.

Let's look at the decrease of volatility as we go higher on our time horizon. It's pretty dramatic. We went from a range of minus 60 percent annualized to 120 percent annualized for the three-month annualized returns, to zero to 30 percent for the 10-year annualized returns.

The recent volatility is really pretty clear. In Figure 12, if you look at the S&P 500 from August 1, 2000 to April 17, 2002, it dropped 41 percent from 15.17 down to 8.93—a large drop. To put it in context with history, look at the three-year annualized return as shown in Figure 13. The star is the minus 17.7 percent annualized return over that two-year, eight-month period starting in August 2000. This is larger than any other three-year period since 1950 by a fair amount. So what do we need to do to get back to our normalized returns? Well, we have got quite a way to go.

Figure 14 shows the two-year S&P returns starting in August 2000 as the yellow line. The dark blue line is the S&P 500's worst five-year return on annualized basis. The pink line is the worst 10-year return on an annualized basis. Then I calculated what would be needed to get back to the five- and 10-year returns. To get back to the five-year return, we'd have to earn a little over 4 percent on an annualized basis over the next eight years, and to get to the 10-year return we have to earn a little under 3 percent. To get back to the S&P 500 average returns on a five-year basis, we'd have to earn 37.5 percent each year for the next three years. On a 10-year basis, we'd have to earn 18 percent each year for the next eight years to get back to the average return. So as you can tell, we're pretty far out on the tail. That's one of the reasons a lot of companies revised their assumptions this year.

How does this affect DAC methodologies? We want to match our expenses and our revenues. DAC is our expenses; expected gross profits are our revenues. We don't have a crystal ball—we don't know what the future estimate growth profits (EGPs) are going to be over the near term, even if we have a pretty good feel for what they're going to be over the long term.

But if when we issued the policy we knew what the EGPs would be over the life of the policy, we could get a perfect match of expenses and revenues—all we need is a crystal ball. In a hypothetical example, the amortization method that matches the revenues expenses best would simply be to use the EGPs generated by the equity market returns assumed in the example. By comparing different methods to the crystal ball method, we can see which methods provide the best matching and specific economic scenarios. Figure 15 shows the assumptions underlying the numerical example of a basic single premium variable annuity.

We'll look at three methods. The traditional method bases the future EGPs on the current fund value using a long-term average return. This does not account for the reality of higher short-term volatility versus lower long-term volatility. The mean reversion method I used was modified for ease of calculation, but represents a 14 percent cap and 0 percent floor methodology. The credibility method averages the EGPs that were calculated at issue with the EGPs calculated under the traditional method at subsequent valuation dates, using a predetermined set of credibility factors.

Figures 16 and 17 illustrate the crystal ball method. Figure 16 shows a flat 9 percent equity market return. The amortization levels the percentage of expected gross profits. In this and all of the following slides, the amortization patterns reflect year-by-year unlocking. In Figure 17, I've substituted the S&P 500 returns from 1995 to 2002. Again, no matter how volatile the market returns, the amortization is always a level percentage of expected gross profits, always generating perfect matching.

Figure 18 is a comparison of the three methods with the crystal ball method, the pink line that runs right about through the middle of the graph. Any deviation from the pink line indicates a mismatch of revenues and expenses. All these models perform well in static markets, but volatile markets are the real test. The problem is that 75 percent of the time, and for 12-month periods from 1950 to 2002, returns were either greater than 15 percent or less than 5 percent; 85 percent of the time for three-month returns they were outside this range.

In general, the traditional method stands out, matching very poorly in volatile markets. The mean reversion method dampens the volatility of the traditional method, but can become volatile toward the end of amortization periods. The credibility method tends to provide good matching over the entire amortization period in a variety of economic scenarios.

As I mentioned, 75 percent of the time returns are outside of the range from 5 to 15 percent. Figure 19 runs the equity returns between 5 and 15 percent alternately each year. It's an extreme case, but it exemplifies that volatility can be generated in your earnings. Again, the pink line waves through the middle of the graph illustrating the ideal amortization pattern. And again, the traditional method—the red line—is the most prominent. It is extremely volatile. The mean reversion

method is close to the crystal ball method for the first 15 years, but becomes volatile in the last 15 years. The credibility method does a moderately good job throughout the entire scenario.

We assume a 9 percent equity market return in all the methodologies, but the market actually only returns 7 percent. Figure 20 shows this fundamental change in the marketplace. In this case, the variation between methods eventually gets dramatic. But in the early years, all the methods do a fairly good job of matching the crystal ball method. It's likely that prudent management would unlock assumptions to correct for these deviations, having seen a 7 percent long-term trend. So it doesn't indicate a potential problem with these methodologies, it simply illustrates that no method can produce reasonable results in all environments without management review.

The sales inducements portion of the nontraditional long-duration SOP showed very little change from the original SOP. The accounting treatment is almost identical to DAC. As a matter of fact, you're going to have another K factor to calculate, separate from your DAC K factor. As a sales inducement is credited, it becomes a component of a policy liability. Surrenders cannot be assumed when determining the amount of the benefit to credit. People aren't necessarily going to lapse before a persistency bonus is earned; you have to assume that they are all earned. Persistency bonuses are credited "ratably over the vesting period" per paragraph D19 of the SOP. Guidance is vague here. You could probably use either a straight-line methodology or some sort of present value methodology to allocate that persistency bonus back over the vesting period.

As sales inducements are credited, an asset is set up and is amortized over the life of the contract under the same methodology as the DAC. Although it's not addressed, it's my presumption that you have to accrue for any non-vested sales inducements, for instance, a tenth of your persistency bonus that hasn't been vested yet. It's been accrued, it's in your liability, but it's not vested. If that policy surrenders, it's going to generate a surrender charge equal to what's been accrued.

As far as loss recognition is concerned, keep in mind you have two K factors now, one for sales inducements and one for DAC. They are separate numbers and you have to keep them separate. Also keep in mind that reductions in DAC from unlocking can be recovered. If your EGPs improve, reductions in DAC from loss recognition cannot. They're lost forever.

Finally, the new SOP applies to deferred acquisition costs on internal replacements. The SOP applies unearned revenue liability and sales inducements to DAC. One exception to the nontraditional long duration SOP is that sales inducements do not have to be part of the original contract if they are part of the non-substantially different modification. The final SOP could change substantially in response to comments, including those from the ACLI and the Academy. I hope it does.

There's a lot of supporting literature. One of note is Emerging Issues Task Force (EITF) 96-19, where they took replacements of DAC, or if you refinance DAC. They had to address the same issue with issuance cost of debt. Their solution was that if the cash flows of the old debt instrument and the new debt instrument were within 10 percent of each other, you could carry the issuance cost over to the new debt instrument. If not, they were two separate issues, and you'd have to write off the issuance cost. They did not choose to apply that to our methodology. They chose what I think was a more subjective and convoluted method.

There are three concepts that you need to understand to define internal replacements. Figure 21 is a flow chart of the decision process. The first box is essentially very inclusive and doesn't help us at all. Virtually every contract change would be considered a modification of the contract—adding riders and amendments, even a policyholder benefit election. The idea was that the form is irrelevant; they're looking at the substance. So virtually every change is included.

The next step is to determine whether the modification is contemplated in the original contract and is one of what I would call the five safe harbors, which are described in the SOP. If so, the modification is not an internal replacement. If this fails, the modification must be evaluated to see if it meets all five conditions to be deemed "not substantially different." If any of the five conditions are not met, then the contract is called an internal replacement and internal replacement accounting is applied. Let's look at these more closely.

Again, if the modification is both contemplated in the original contract and doesn't substantially change the contract, it is not an internal replacement. The five safe harbors basically eliminate much of what you'd be handling, such as interest credit changes and mortality charge changes. There are five conditions that define "not substantially different." Whether the modification changes the inherent nature is the most subjective one. Inherent nature is defined by the degree and kind of mortality or morbidity risk, and the kinds of provisions for determining investment return. That's extremely broad.

Modifications that do not change the inherent nature of the contract would not be considered internal replacements. The SOP provides examples of internal replacements and the reasons they are considered internal replacements

This SOP will be implemented in 2004, and will be applied prospectively. If it is an internal replacement, you terminate the old contract, write off all your DAC, or you set up a new contract, then you assume it's a new contract that's issued. If it is not an internal replacement, any modification would simply be a renewal transaction in the contract.

MR. TSANG: Thank you, Brad. I would like to talk about these new reserve developments and how they affect the pricing process. I will also cover some of the tax rulings.

When I still had all my black hair, I was a pricing actuary. We only did a deterministic scenario. The best we could do was to add in some kind of optimistic and pessimistic scenarios. But that time seems to be gone. Now, because of the volatility in the equity return and the additional contractual guarantees, we are moving more and more toward a stochastic process. Not only is the pricing moving toward a stochastic process, authorities are also requiring some kind of stochastic processes. For example, in the proposed RBC regulation, as Errol mentioned earlier, insurance companies are required to perform cash flow testing using equity models. Also, even though Actuarial Guideline 39 called for the summation of all the charges that you have collected in the past, you still need cash flow testing to justify that this is adequate.

In the new SOP on long-term duration contracts, the GMDB and GMIB also require some kind of scenario testing, though it stops short of requiring stochastic projections. Stochastic processes commonly used today are the Lognormal Brownian motion, which is similar to the linear Brownian motion you learned in college. Recently, we have a much more interesting one called Regime Switching lognormal with two regimes. The new model is based on the hypothesis that the equity market is composed of bull and bear markets. Sometimes it stays in a bull market for a while before it bounces to the bear market. Unfortunately, it also stays in the bear market for a while before it comes back to the bull market. So the whole process is just about switching markets.

To illustrate why we're using this regime switching process, Figure 22 shows the recent equity return of the Dow Jones Industrial Average from 1960 to 2002. I used the Dow because, first, the S&P 500 has been overused. The second is that some of your company's variable annuity mutual funds may not be invested in S&P 500 type assets. So always looking at the S&P may not give you the full picture.

Looking at this graph, you can see that some of the bull markets are interrupted by bear markets. Fortunately, as we see on the graph, the overall trend is positive. If we use the average return, for example 6 percent, we would not have any problem when we do our GMIB and GMDB pricing. But the reality is that we are not going to have a fixed rate of 6 or 7 percent.

Looking at a simple lognormal model may not provide all the necessary sophistication for you to test the equity risk. We've been on a bear market for a while, and companies are under stress because the account values and M&E charges are reduced. However, you should not underestimate the importance of a simple lognormal model because it is valuable for the valuation of variable annuities. Actually, the Black-Scholes formula is based on the simple lognormal model.

In light of the graph, it is my opinion that the Regime Switching lognormal with two Regimes appears to be a more reasonable model to generate equity return, pricing and reserving for variable annuities. In fact, the RBC C-3 Phase Two project also

prefers this Regime Switching model rather than a simple lognormal. But the model that you use is not more important than the input parameters. If your input parameters are not reasonable, then the generated equity scenarios won't be either. I would suggest that you do not do this kind of parameter setting in a vacuum. Please talk to your investment department or your investment officers, and come up with a reasonable set of input parameters.

After we have generated equity scenarios, the next thing to consider is what kind of hedging instrument you may use to minimize equity risk. First, you have to decide how much you need and, second, whether such a hedging instrument exists. The amount of the hedging derivatives is really a function of the actuarial assumptions for future projections. For the death benefits, a company can easily use a short-term put option, which are plentiful and readily available for you to buy, in order to hedge the death benefit risk. Since the death benefit is a non-elective benefit, you can usually use the Law of Large Numbers to get a pretty good estimate.

For the annuitization benefit, it is a completely different story. First of all, VAGLB won't hit you until maybe 15 years down the road when that guarantee becomes effective. Some policyholders may surrender their policies during the first 15 years. There aren't many hedging instrument that would provide the hedging benefits 15 years from now. Second, even if you go to an investment banker and have an option custom made, it may be too expensive. Third, you do not collect all your GMIB charges up front. You collect them gradually. So where do you come up with the extra money to buy that put option? Fourth, if your contract has some kind of roll-up reset feature, the put option you purchase today may be useless five years down the road when you reset. So in this case, your hedging instrument for the GMIB is limited. When you price your product, you need to look at not just whether you have enough M&E charges, but whether you have any assets you can use to hedge your risk. The Law of Large Numbers in general does not apply for VAGLB benefits, so the company is really at the mercy of how policyholders take advantage of the benefits.

Another method is to use a conservative purchase rate. If it is too conservative, there is no incentive for anyone to buy a guaranteed minimum income benefit (GMIB). So you have to balance a lot of constraints. Also, the reinsurance market is very limited for this kind of benefit.

In another session that I attended, they talked about the pricing of the variable annuity riders. They dealt with how to bundle the GMIB, GMDB and GMAB together. First of all, you cannot die and collect annuity benefits at the same time. So if you sell both of them in the same contract, you actually have only one outcome but you collect two charges. So I would suggest that in addition to looking for hedging assets, also look at liability. Is there any way I can use liability options to offset your risks and collect the fees at the same time for both of them?

Actuarial Guideline 39 calls for an additional reserve and it may increase the surplus

strain and the cost of capital. Thus, you may have to increase your M&E charges in order to achieve the same level of profitability.

The new SOP on annuitization and GMDB reserve will most likely force you to establish a higher reserve up front. When the reserve trickles down, the change in reserve will be combined with EGP to form a new revenue stream. I have done some numeric examples. Results indicate that the return on equity with the new reserve will actually tilt the ROE slope. I think most people would like to keep it as level as possible.

There are other emerging issues with variable annuities. For example, if you have a variable annuity that has an equity-indexed annuity (EIA) investment option, you are going to calculate the contract's statutory reserve under two methods. You have to use AG 35 for the EIA portion and a typical AG 33 and 34 for the others. It's hard for anyone to draw any meaning out of this: Shall we use only one method, or shall we use both methods?

The other issue is, if a variable annuity also offered a two-tier general account investment option, then insurance companies may need to calculate a general account annuitization reserve and variable account GMIB reserve. If a policyholder moves his money into two-tier general account, then the insurance company would have to write down the variable account GMIB reserve and establish a new reserve for the two-tier annuitization benefit. So these possibilities will make your GAAP reporting a little harder.

The last thing I would like to touch on is the tax reserve and revenue rulings. AG 39 calls for accumulation of charges and cash flow testing. The reserve is not really calculated using any federal interest rate or prevailing table. The method is also not CARVM. So is it a tax-deductible reserve? I don't think I know the answer. I think this is being debated among all the insurance companies and you will have to decide what's appropriate for your company. Also, the dollar-for-dollar partial withdrawal may create a significant increase in reserves. Can we use that as a tax reserve? That is something that needs to be discussed too. The IRS so far has been very silent on these two issues.

One of the most important revenue rulings is 2002-6. If your company adopted AG 33 as a clarification of CARVM in your calculation of tax reserves for policies issued after the adoption date of AG 33, it is considered to be a change of valuation method. As a result, the differences would need to be spread over a period of ten years. If you read AG 33 carefully, it is simply saying that this is just a clarification, it's not a change of method. But the IRS is ignoring this statement. This revenue ruling does not mention AG 34 reserve. Prior practice on GMDB reserve called for a one-third drop. Now the drop percentage is changed to different percentages. Would that be considered a change in method? I don't know. But we would like to see how the revenue ruling will be applied going forward.

With respect to the revenue ruling on 1035 Exchange, you may exchange two policies for one policy and again still call the process a 1035 Exchange. The most important point is that you may surrender two existing contracts and move all the money into another contract. The process is still called a 1035 Exchange. So the Service has been very generous in allowing people to do this type of tax-free exchange. Our SOP on internal replacement, on the other hand, gives us a harder time.

The last thing is Regulation 248110-96 on the modified guaranteed contracts, also known as the market value adjustment contracts. In the past, we had to use an interest rate prescribed by the Secretary of Treasury as the tax valuation rate. Such practice is perceived as too subjective because insurance companies are at the mercy of the Secretary of Treasury. Insurance companies want to move toward a more objective rate based on the Constant Maturity Treasury rates for tax valuation. As far as I know, this proposal received some comment letters but was never adopted. Also, these modified guaranteed contracts usually have a higher guaranteed interest rate and insurance companies are protected by market value adjustments. IRC 811(d) indicates that if the guaranteed interest rate is higher than the discount rate, the projection using such guaranteed interest rate cannot go more than the current tax year. In other words, the tax excess interest reserve is limited. Many insurance companies are asking for exemption for market value adjustment annuities.

MR. GEORGE HARRISON: (Pennsylvania Insurance Department). I'd like to address a question to Mr. Cramer. You spoke about a situation where there would be a minimum guaranteed death benefit of about \$10,000 and an account value of \$8,000, where there would be a net amount at risk of \$2,000. The question has been raised about what would happen if the annuitant chose to transfer funds from the separate account to the general account. If that were to happen, we would think it would be appropriate not to use the recovery rate, as specified in Actuarial Guideline 34, but the much lower rate guaranteed under the general account, then the net amount at risk would go away much more slowly. The question we're wrestling with is whether this should be considered an elective benefit and whether it should then be taken into account under Actuarial Guideline 33?

MR. CRAMER: If someone actually does transfer from a separate account to a general account, then there's no issue at all, because the AG 34 calculation is very clear that drop and recovery is based on where the funds are. So is your question whether someone should actually anticipate a transfer of funds that are currently in the separate account as of the valuation date?

If someone actually transfers their funds from the separate account to the general account, I doubt there's any ambiguity. In the calculation of the net amount at risk and the AG 34, the drop and recovery are based on where the funds are. So the recovery rate from the general account being as prescribed its statutory valuation rate was consistent with where the funds are. I think the question that is more

interesting is should one anticipate that a policyholder could in theory choose to transfer their funds? And if they transfer their funds after the funds have dropped, they would then recover at a much slower rate. Actually, if they transfer the funds to the money market account, even if it was in the general account, it would even be a slower recovery.

For cash flow testing, one definitely has to consider that as a possibility. Although companies have been looking at the rate at which people have been transferring funds and money in terms of the formula calculations, I don't know if there is any ambiguity. I think AG 34 is very clear that you base drop and recovery on where the funds are as of the valuation date.

MR. TSANG: I have one question to Mr. Cramer. Do you think that the new reserve methodology proposed by the variable annuity reserve work groups should be adopted as a model regulation or an actuarial guideline?

MR. CRAMER: I may be able to make a better call on that one, since I know the details. I think it's still very far from being formulated. The original proposal was that this was going to be settled quickly. There was an RBC proposal, modified conditional tail expectation. Should we just make that a reserve requirement? It could be very simple and you'll be done. It's clear that that's not going to work.

They should go back to the drawing board on what type of reserving should be set up. Should the reserve be a very volatile reserve that they could set up based on what your condition is as of the one day that you're looking at—the valuation date? Or should it be some type of funding methodology like you have under GAAP—the long duration SOP where you look at funding of a longer duration? Or borrow something from the EIUL guideline, for example? It looks at 36-month moving averages for certain hedging and derivatives. So the issue really is what are you going to come out with, and it's very unclear. I think they have a blank slate. I'm not in that group, but I have been monitoring what they've done. The issue then is once they decide what they want to propose, how different is that from CARVM? If it still can be forced into the CARVM framework, you can call it a guideline. But if it's really not the same, you don't have a choice, you have to go to regulation. And the regulation is a much longer process, because every state has to get it adopted. So it really comes down to finding out where the ultimate direction is.

Chart 1

SOA Spring Meeting
59 PD
Reserving Issues for
Variable Annuities

Actuarial Guidelines (AG)

- ➡ **AG13** – Waiver of Surrender Charges
 - ◆ Must consider transfers among funds

- ➡ **Proposed AG “VVV”** – Never Adopted
 - ◆ Concept of fee income as spread off valuation rate

- ➡ **AG 33** – Multiple Benefit Streams
 - ◆ Elective and non-elective benefits
 - ◆ Covers case where minimum guaranteed death benefit (MGDB) is account value

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Chart 2

SOA Spring Meeting
59 PD
Reserving Issues for
Variable Annuities

\$-for-\$ Issue

Example with Return of Premium Death Guarantee

	<u>Current</u> \$	<u>After \$7,500 Withdrawal</u> \$
Premium	10,000	2,500
Account Value	8,000	500
NAR	2,000	2,000 *
Projected NAR	Grades to zero	Continues to maturity age

• Would be \$125 with proportionate reduction (500/8,000 of 2,000)

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Chart 3

Universal Life Type Contract with Death or Other Insurance Benefit Features

- **Benefit Ratio** technique
 - $BR = \frac{PV[\text{Excess Payments}]}{PV[\text{All Fees \& Spreads}]}$
 - $\text{Liability} = BR * PV[\text{Historical Fees \& Spreads}] - PV[\text{Historical Excess Payments}]$
 - BR could exceed 100%
 - Liability can never be negative
- Regularly evaluate estimates - recalculate liability:
 - Using actual history and updated projection to derive new benefit ratio
 - Re-accrue liability to balance sheet date with new benefit ratio
 - Akin to an unlocking of DAC

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Chart 4

Recent Results of Public Companies Methods & Assumptions					
<small>(in millions unless otherwise stated)</small>					
Company (Symbol)	Method	Long Term Yield Assumption	Yield Limitations	Years Yield Adjustments Made	Underlying Assets (in billions)
Aegon (AEG) (US Business)	Mean Reversion	9%; 9.5% prior to 4Q02	12%; 14.5% prior to 4Q02	5	€ 31
Allmerica (AFC)	Mean Reversion	8%	12%	5	
American International Group (AIG)	Traditional	NA	NA	NA	
Hartford Financial Services (HFS)	Traditional: unless "the present value of future gross profits" falls outside a reasonable range.	9%	NA	NA	\$64
John Hancock (JHF)	Mean Reversion	8%; 9% prior to 4Q02	13%; mid-teens prior to 4Q02	5	\$30
Lincoln National (LNC)	Mean Reversion	9%; 14% prior to 4Q02	1% and 14.5%	8.6	\$34
Met Life (MET)	Mean Reversion				
Nationwide (NFS)	Mean Reversion	8%	0% and 15%	3	\$32
Prudential (PRU)	Modified Mean Reversion	9%	< 15%	4	\$15

Source is from 12/31/2002 Form 10K or 20-F and Insurance Industry Analyst Reports

Chart 5

Recent Results of Public Companies Adjustments to DAC Balances

(in millions unless otherwise stated) Adjustments to DAC for Year ended 12/31/2002

Company (Symbol)	Total Due to Equity Market Decline	Total for Variable Products	Total for Variable Annuities	Total Reduction in Income Due to Equity Market Decline	Total DAC Balance at 12/31/02 (in billions)	2002 DAC Adjustments as % of Consolidated DAC Balance
Aegon (AEG) (US Business)	€ 450				€ 14.089	3.10%
Allmerica (AFC)	\$629			\$698	\$1.242	33.63%
American International Group (AIG)						
Hartford Financial Services (HFS)	\$0				\$6.689	0.00%
John Hancock (JHF)	\$64	\$49	\$36		\$3.996	1.58%
Lincoln National (LNC)	\$89	\$49			\$2.971	2.91%
Met Life (MET)	\$111				\$11.727	0.94%
Nationwide (NFS)	\$347	\$328			\$3.027	10.29%
Prudential (PRU)	\$137				\$7.031	1.91%

Source is from 12/31/2002 Form 10K or 20-F and Insurance Industry Analyst Reports

Chart 6

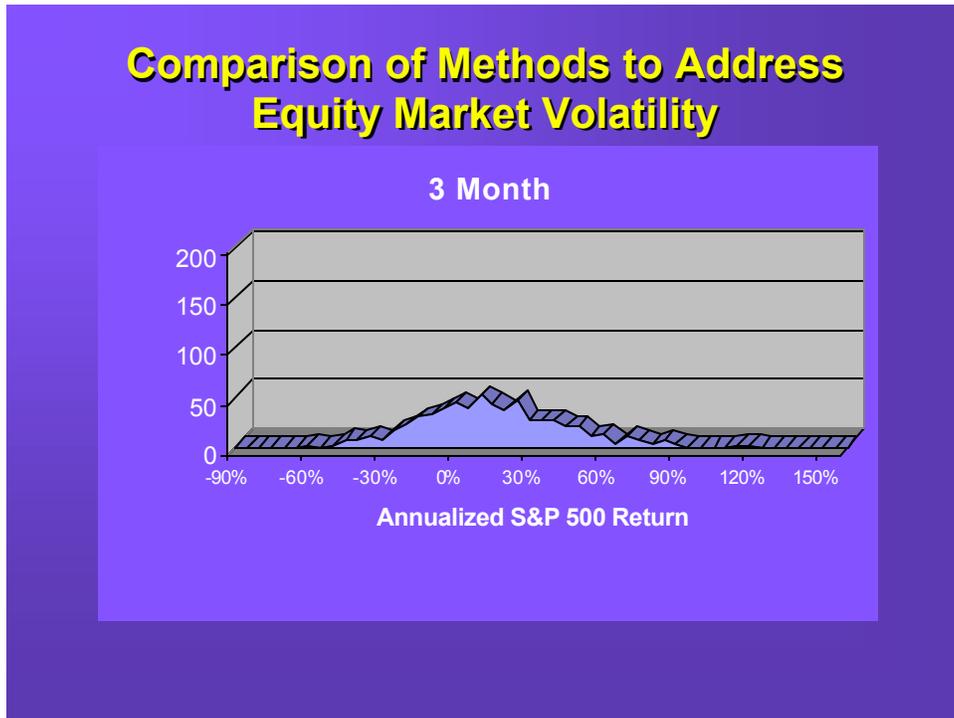


Chart 7

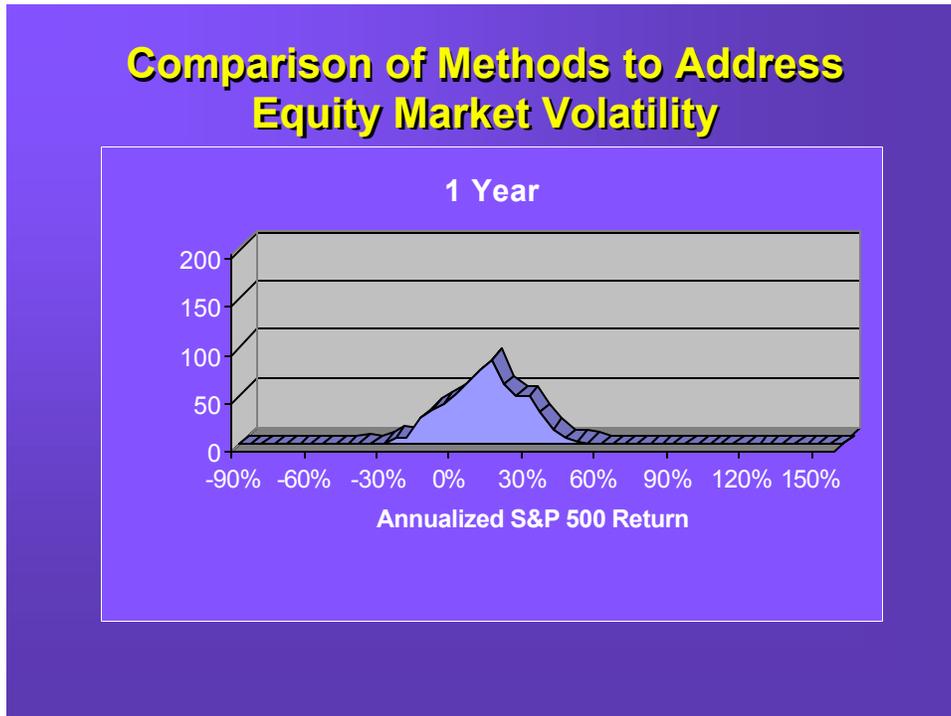


Chart 8

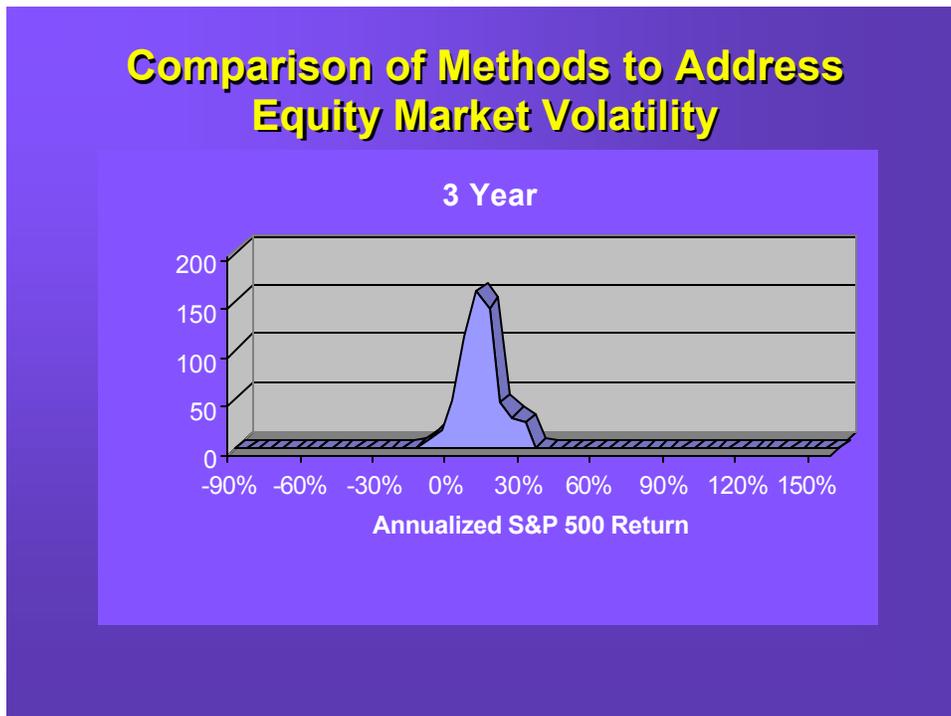


Chart 9

Comparison of Methods to Address Equity Market Volatility

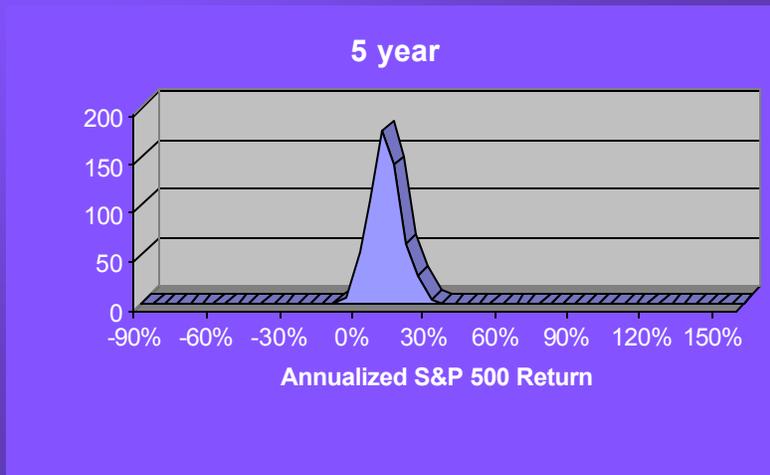


Chart 10

Comparison of Methods to Address Equity Market Volatility

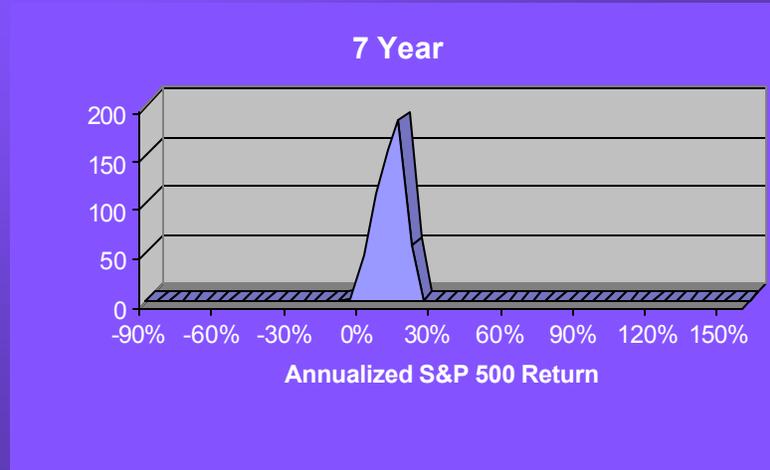


Chart 11

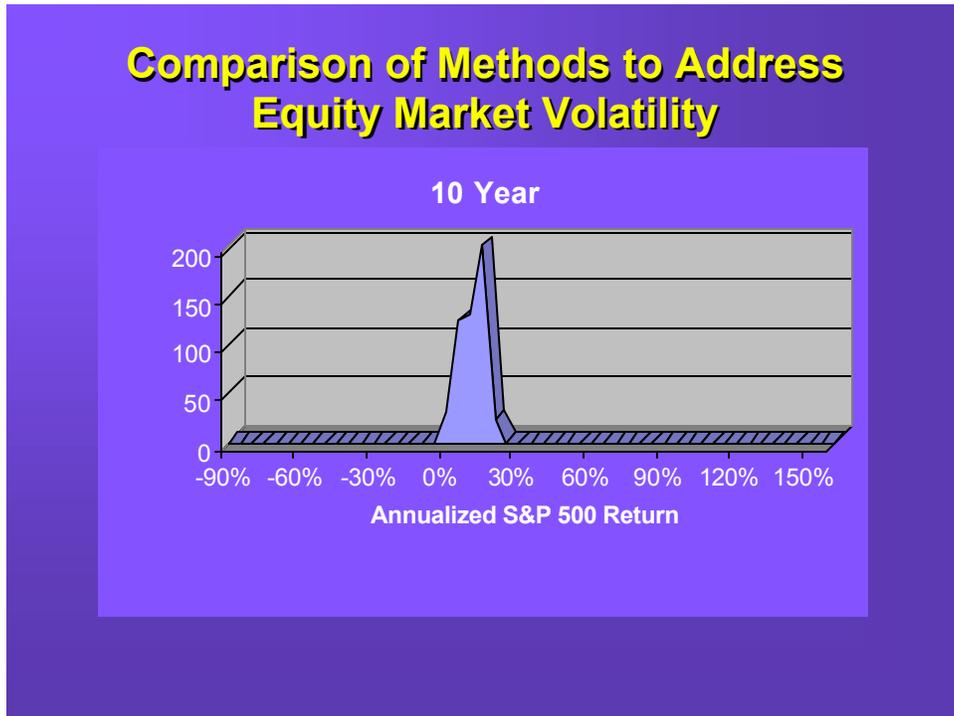


Chart 12

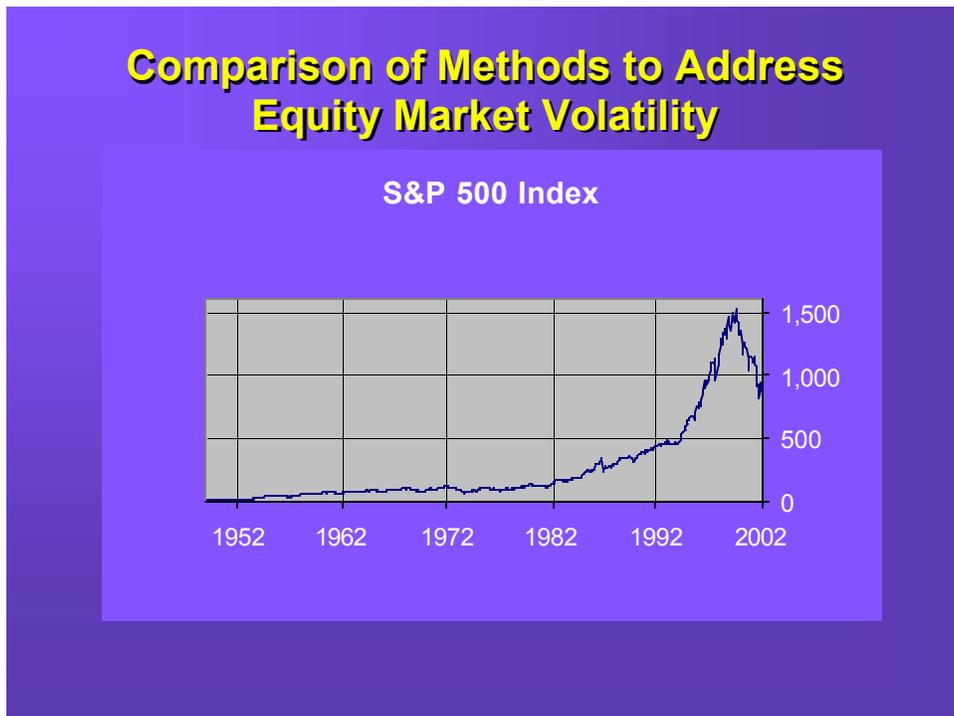


Chart 13

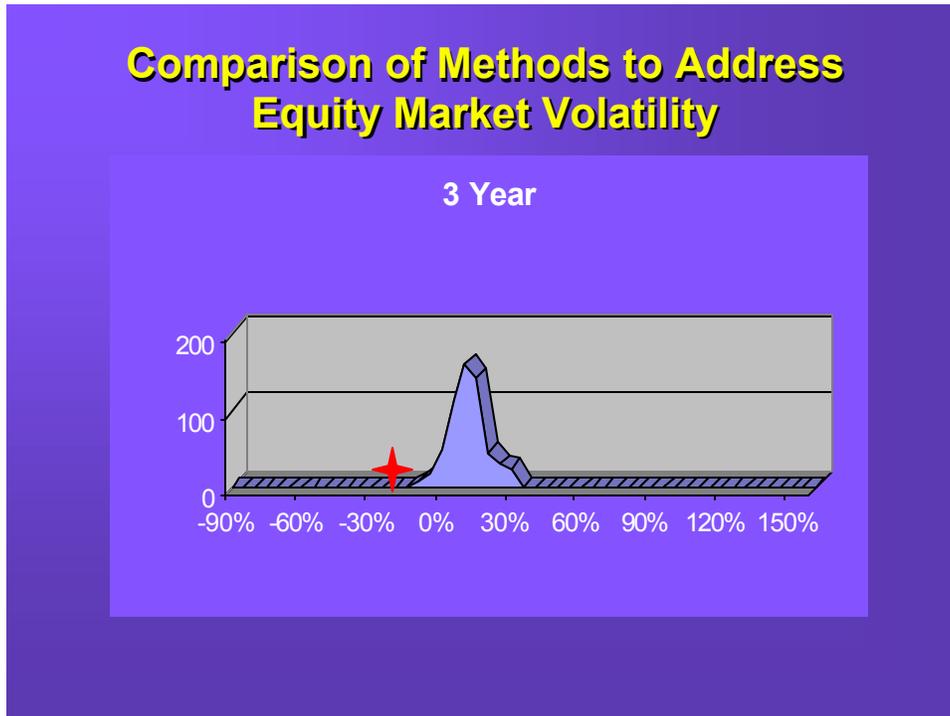


Chart 14

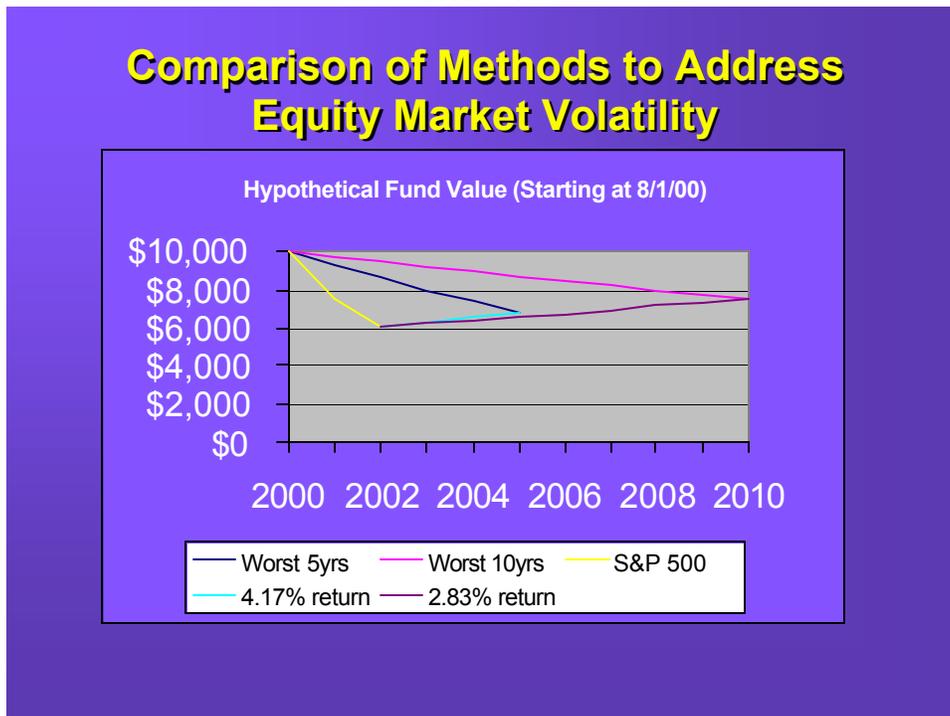


Chart 15

Comparison of Methods to Address Equity Market Volatility

Numerical Comparisons

Assumptions

- Single Premium \$10,000
- Avg. Long-term Fund Performance 9%
- M&E Charges 140 b.p.
- Expenses 50 b.p.
- Issue Expenses 7% of Prem.
- Surrender Charges 7%,6%,5%,4%,3%,2%,1%,0% thereafter
- Surrender Rates 4% except 15% in year 8

Chart 16

Comparison of Methods to Address Equity Market Volatility

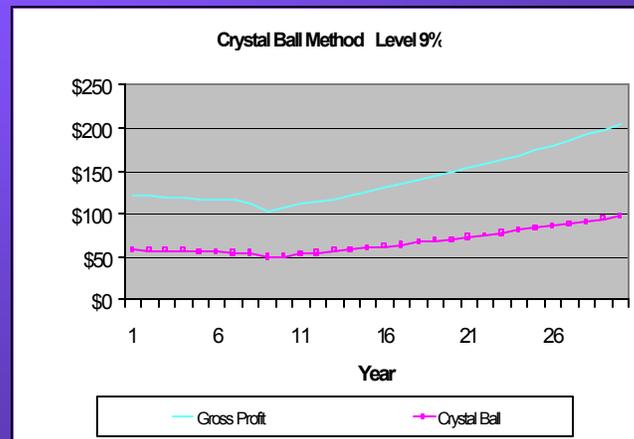


Chart 17

Comparison of Methods to Address Equity Market Volatility

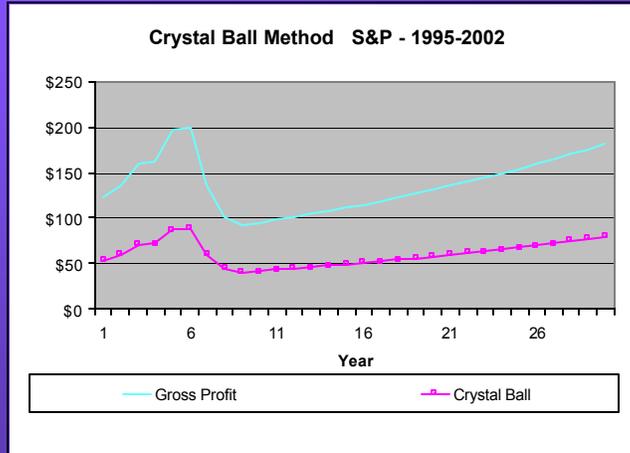


Chart 18

Comparison of Methods to Address Equity Market Volatility

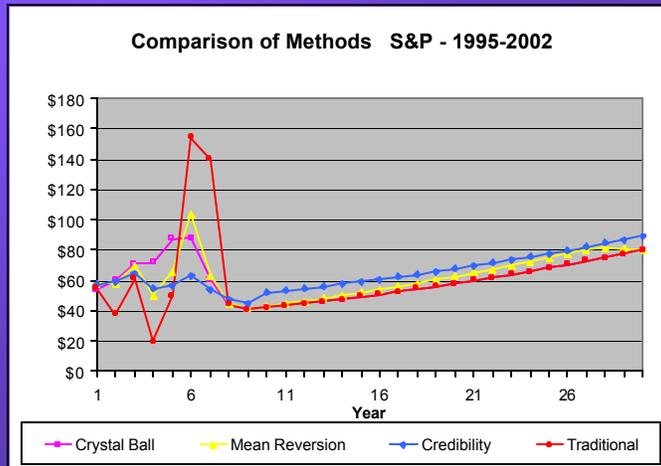


Chart 19

Comparison of Methods to Address Equity Market Volatility

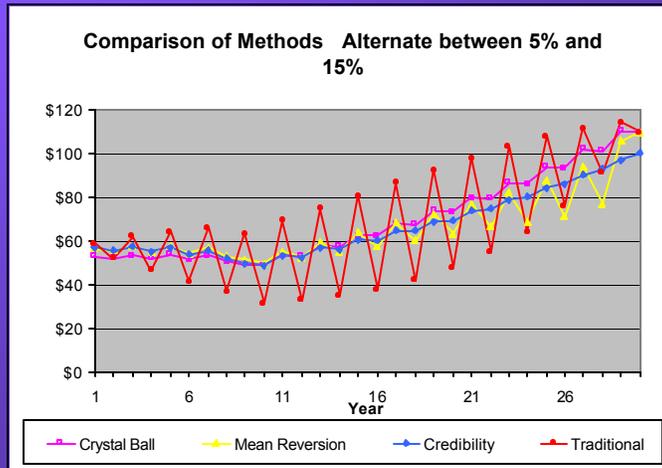


Chart 20

Comparison of Methods to Address Equity Market Volatility

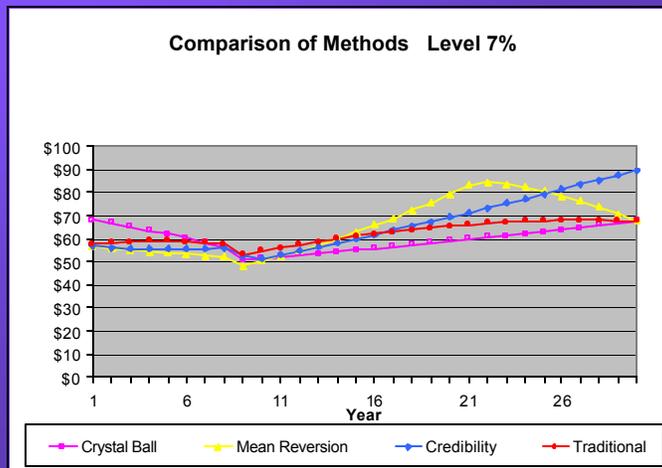


Chart 21

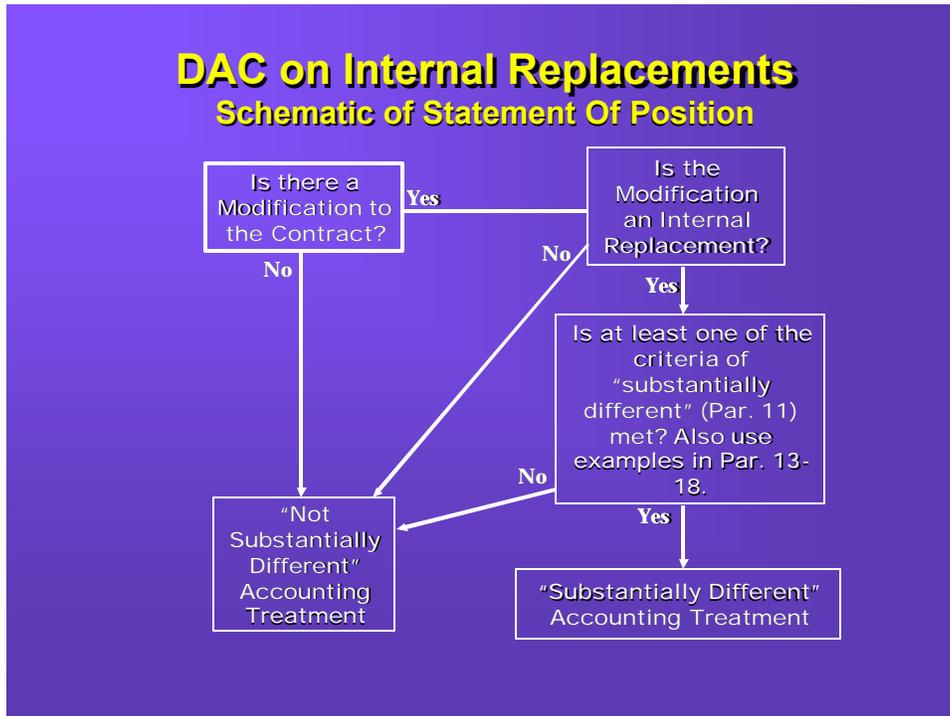


Chart 22

Recent Equity Returns

DJIA Returns from 1960-2002

