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Session 93PD
Capitalizing On The Financial Reporting Process: What Does GAAP Tell Us?

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Summary: Life insurance companies are required to prepare financial statements on different accounting models. Most recently, GAAP requirements have been extended to mutual insurance companies. Financial reporting pursuant to GAAP can generate important management information.

Mr. Craig W. Reynolds: What does GAAP tell us? I think we have a pretty good panel that has done a lot of work putting together some good presentations. I have the easy job of introducing them which I'm going to attempt to do now.

There are three objectives of this session that are listed in your program. You will go away knowing what types of management information can be developed from GAAP, how to interpret that information, and how to measure emerging experience versus expectations. Those are all large tasks. It would be impossible to answer those questions completely and in general in a session of an hour and a half in length, but I think we'll take a good stab at achieving each of those objectives to the extent we can in the time that's available.

We have three speakers that are going to talk about various aspects of this issue.

Note: The charts referred to in the text can be found at the end of the manuscript.

The first one is Bruce Darling, who's going to focus on return on equity and how to interpret what it means. Anthony Tokarz is going to look at one of the aspects of GAAP that a lot of companies struggle with, which is sources of earnings analysis and how to use that to manage your business. He'll use a case study approach. Mary Ann Broesch is going to talk about a variety of issues, focusing on reinsurance as her angle.

Bruce Darling is a vice president of Aon Consulting where he teaches insurance accounting for book seminars. He's editor of the SOA *Professional Actuarial Specialty Guide for U.S. GAAP* and has written a number of articles on using GAAP for management, demutualization, and other topics, some of which are study notes for Society exams.

Anthony Tokarz is associate actuary of preneed marketing at Allianz Life Insurance Company of North America in Minneapolis. This division of Allianz focuses on preneed as well as final expense insurance products, and this is a fairly niche type of market. I hope Tony will start off by explaining, for those of you who aren't familiar with it, what preneed and final expense is. Prior to that he was assistant vice president and associate actuary for American Memorial Life Insurance Company in Rapid City, a company which specializes in preneed life. For the past six years Tony's focus has been in the area of financial reporting and experience studies of various preneed and final expense products under GAAP, statutory, tax, and Canadian GAAP bases.

Mary Ann Broesch, the final speaker, is a financial actuary at Security Life Reinsurance where she's responsible for valuation, modeling, financial reporting, and planning.

Mr. Bruce R. Darling: We're going to talk about understanding GAAP return on equity concepts, we're going to keep it at a fairly simple level to try to understand why we get the kind of GAAP return on equity (ROE) results that we do. To set the stage for that, I just want to make one provocative statement. I think that with the possible exception of earnings per share, ROE is *the* most important financial performance measure that we all live with, and just to transform that impression into facts, let me just ask for a show of hands. How many of you work in companies where ROE is an important objective? Quite a few of you. Does the term incentive compensation ring a bell? Yes. It makes a difference not only to us but also to the shareholders and, of course, the analysts who review our performance. It's something that we're very interested in.

We use GAAP ROEs to decide certain strategic questions for our business like what particular lines of businesses to be in and whether or not to devote additional

resources to those lines of business, and we would typically prioritize in order of the types of returns that we're going to be getting.

To implement those kinds of strategies we get into what I call tactical management. There are two phases of this. One is structural. In other words, what do you do in setting up your business or pricing your products before the policies that are issued get you there? The other active tactics that you employ after you've issued the policy is to make sure that you get what you'd hoped you were going to be getting.

Let's look at the traditional expression for ROE (ROE equals return divided by equity) and figure out what we can learn about the performance of ROE. What is it that drives the results that we get? In its simplest form, you have a numerator and denominator. If you can increase the numerator or decrease the denominator, you're going to get a higher ROE. Right? We can actually expand on this a little bit and get some better information:

FORMULA 1
EXPANDED EXPRESSION FOR ROE

$$ROE = \frac{R_p + (i * E)}{E}$$

$$ROE = \frac{R_p}{E} + i$$

We can split return into two components. One is the GAAP returns on the product itself. That's the R with the P subscript, or the product return. In GAAP, we get supposedly level returns relative to some basis when assets are equal to liabilities. Take into account the fact that you also have equity and you're going to have interest on that equity (in other words, the yield rate times that equity in addition to the product returns), and both of those together divided by equity give you a return. You can simplify down at the bottom and see that you have two components— the product returns over equity plus the yield on the assets backing equity.

Chart 1 shows what the returns would be with a given *i*, yield on assets backing equity of 7% and a given amount of product return. If you're able to reduce the amount of equity, you have to devote to that line of business, you could really drive up your ROE. You can see how going towards zero is actually asymptotic. If you can get down to minimal equity, you can have stupendously high ROEs, but if you have high equity, you're driven down just to that baseline of the interest rate on

equity. Chart 2 shows the opposite of Chart 1. If you have negative product returns, it's also going to converge on the interest on assets backing equity, and it is also asymptotic at zero. We have a little bit of wiggle room. If you do have a high amount of equity, you can actually have negative GAAP product returns and still have a positive ROE. If we end up with low amounts of equity and low or negative product returns, you can leverage those into a negative infinity ROE, but none of us wants that.

Chart 3 is another view of the same sort of thing we're talking about. It shows varying product returns. The baseline is 7% for the interest on assets backing equity. Here we have two different products that have the same amount of product return for a given point, but you can see that with the low equity, you can really leverage the much higher ROEs. The bottom line is burdened with five times as much equity as the top line.

We should talk a little bit about what GAAP equity consists of so that we're all clear on that. I do not want to focus on the company level but on the product level, and when we're looking at products or lines of business, we're going to find GAAP equity as being equal to GAAP differences plus statutory surplus. Some of you may have run across this before. For some of you, it may be new.

I want to show you where this comes from. It comes from what I call the statutory constraints model (Chart 4). I don't know if anybody else uses that term, but I use it all the time. I'm trying to get it into common usage. Remember that we're talking about GAAP ROEs, but we live in a statutory regulated world. We have to have assets equal to our statutory liabilities plus some risk surplus. We know we have to have assets at least to give us risk-based capital to keep us out of the clutches of the regulators, but typically we want to have some larger amount to keep us well away from the clutches of the regulators and to weather economic storms. Maybe you estimate yours at 125% of risk-based capital (RBC) or maybe 150% or maybe you have a more sophisticated model that gets you there by a different methodology, but you have to have at least that much in invested assets.

In Chart 5 we took this statutory reporting situation, and did a GAAP conversion. I've done that, and I guess a few of you have, too. Let's see what that does. We start off still with assets equal to the statutory liabilities and risk surplus, but now we have GAAP differences. That gives a big boost to equity because we get mostly additional deferred acquisition cost (DAC) assets offset by some liability differences. The GAAP equity that we're talking about is the statutory risk surplus, plus all the GAAP differences netted out on both sides of the balance sheet. If you have something like a *Financial Accounting Standard (FAS) No. 97* account balance product, you may actually have even more invested assets because you're going to

want to have invested assets equal to the full account balance plus all the stuff that you have here, and so it may actually boost it up a little bit more.

Let's look at relating return on equity to our GAAP profit ratios. It is expressed as follows:

FORMULA 2
RELATING ROE TO GAAP PROFIT RATIOS

$$ROE = \frac{R_p}{E} + i$$

$$ROE = \left[\frac{R_p}{Basis} * \frac{Basis}{E}\right] + i$$

I talked about how we're supposed to get level returns in the GAAP world. *FAS No. 60* told us that we're supposed to get returns that are a constant percentage of premiums, and *FAS No. 97* says that we're supposed to get returns that are a constant percentage of estimated gross profits. You can take that GAAP basis and divide through in the numerator and denominator. This is just ninth grade algebra, right? You can expand the expression a little bit more. This formula was a revelation for me because I'd always wondered whether there is a simple conceptual relationship between GAAP basis of earnings and return on equity. I searched the literature and couldn't find one, but this is it. ROE is equal to the GAAP profit ratio times an equity multiplier, plus the rate of interest on assets backing surplus.

Let me back up to what that equity multiplier is. It's basis over equity. I call it a multiplier because usually we think of it as an inverse of the ratio of equity to premiums or the ratio of equity to some other basis. With *FAS No. 60* products we're looking at ROE as being equal to the product returns over premiums. That should be a constant. Of course we know that there's going to be a little slippage over time because of the release-from-risk concept, or the provision for adverse deviation being released over time. The ratio of premiums to equity is that equity multiplier. It's the inverse of the ratio of equity to premiums, which you might think of as how much equity we need to hold on this line of business? Remember, that *E* is the risk surplus plus the GAAP differences.

FORMULA 3
RELATIONSHIP OF ROE TO GAAP PROFIT RATIOS

Example: *FAS No.60* Products

$$ROE = \frac{R_p}{Premiums} * \frac{Premiums}{E} + i$$

When you go to *FAS No. 97* you substitute estimated gross profits for the premiums, but, frankly, very few people have a good handle on how estimated gross profits behave on our account balance products. When we think of the volumes of our business we think of how much assets under management we have. We think of the account balances that we have on our universal life, our deferred annuities, and our pension business, and so we may have as a working approximation this kind of a formula. You can substitute any basis that you want to.

FORMULA 4
RELATIONSHIP OF ROE TO GAAP PROFIT RATIOS
EXAMPLE: *FAS No. 97* Products

$$ROE = \left(\frac{R_p}{EGP} * \frac{EGP}{E} \right) + i$$

You might look at your business in terms of return on assets (ROA). That's what the first part of the formula below shows. The *RP* over assets is ROA. You look at how much your assets are as a multiple of equity, and you get that equity multiplier.

FORMULA 5
RELATIONSHIP OF ROE TO GAAP PROFIT RATIOS
Working Approximation: *FAS No. 97* Products

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$$ROE = \left(\frac{R_p}{Assets} * \frac{Assets}{E} \right) + i$$

This is all very theoretical, and I know you followed me because it's simple algebra, but you might wonder how the numbers work out. Let's take a look some tables. The next three tables will show us how we can take this concept and look at a couple of *FAS No. 60* lines of business, a couple of *FAS No. 97* lines of business, and develop ROEs from these basic numbers.

Let's get the equity multiplier out of the way, and to do that we need to know what is the risk surplus need (Table 1). What is the GAAP difference that we have? Put those two together and divide them into one to get the inverse of that and to get the

multiplier. We can see that in some cases we have no GAAP differences. In group accident and health (A&H) and in pension business, if there are no real acquisition costs, then there are probably no real GAAP differences.

When you get into the other lines of business, you have more or less acquisition costs that tend to drive that. You also have the statutory surplus that varies by line of business, and so you need to know what that is as well. For group A&H, you have risk-based capital requirements that are mostly C-2 risk and the pricing risk as a percentage of premium. Traditional life would be more net amount of risk, universal life, net amount of risk plus the asset risk, just like we have for deferred annuities and pensions. That's where you're really getting your riskiness. Some of these lines have very big risk surplus requirements and others have minimal ones.

TABLE 1
EQUITY MULTIPLIER=BASIS/EQUITY

Product Segment	(1) SAP Surplus/ Basis	(2) GAAP Differences/ Basis	(3) =1/ [(1)+(2)] Equity Multiplier
Group A&H	15% premium	none	6.66
Traditonal Life	25% premium	50% premium	1.33
Universal Life	5% assets	10% assets	6.66
Deferred annuities	3% assets	3% assets	16.66
Pension	3% assets	none	33.33

The second thing to do is to look at what the GAAP product returns are in relationship to equity (Table 2). If you look at it in terms of the returns relative to premiums or relative to assets, ROA basis point spread, and take the equity multiplier times that, we find the first component of our ROE formula. In my manufactured little world, all of our results are about 8% for the product returns over equity with a little liberal rounding on one or two of these things. I hope you'll forgive me for that. I know that actuaries are infamous for looking at six decimal places of precision. I don't quite have that here. We take this 8%, add 7% to it (the yield on assets backing surplus), and we get the 15% (Table 3). This is the way that we build to get the ROEs that we'd like to have.

TABLE 2
RISK RETURN COMPONENT=PRODUCT RETURN/EQUITY

Product Segment	(4) *Rp*/Basis	(5) =(3)Equity Multiplier	(6) =(4)*(5) *Rp*/E
Group A&H	1.2% premium	6.66	8.0%
Traditional life	6% premium	1.33	8.0
Universal life	1.2% assets	6.66	8.0
Deferred Annuities	0.5% assets	16.66	8.0
Pension	.25% assets	33.33	8.0

TABLE 3
RETURN ON EQUITY=RISK RETURN COMPONENT+I

Product Segment	(7) =(6)*Rp*/E	(8) i	(9) =(7)+(8) ROE
Group A&H	8.0%	7.0%	15.0%
Traditonal life	8.0	7.0	15.0
Universal life	8.0	7.0	15.0
Deferred Annuities	8.0	7.0	15.0
Pension	8.0	7.0	15.0

There are several things we can do to affect the ROEs that we're actually able to achieve. We can adjust GAAP product returns, assign more or less risk surplus to business segments, change the level of acquisition cost, allocate higher- or lower-yielding assets to surplus. Don't these things all follow from just the components of the expression that we talked about? Each one of these things is just tweaking one little piece of it.

I have some examples here of what the results would be in our little hypothetical world. Let's say that on our *FAS No. 60* products, we were able to boost our profits by 1% of premium. What does that do to our ROE? It probably isn't intuitively obvious at all. In fact most of us would probably resort to our little actuarial projection models and use brute force. We'd change the assumptions, and we'd throw them on through and see what the accounting page would give us as our ROEs. As shown in Table 4, if you take the equity multiplier times that change in return over the basis, you can see immediately what the increase in ROE is going to be. This also applies to the deposit type contracts that are expressed in terms of basis points on assets. Where you have the highest equity multiplier, in other words the lowest equity need, you're going to have the biggest change in ROE. You may think, for example, if you can change your expense levels by 10 basis points

on any line of business, you ought to get about the same result in ROE, but that's not true at all. It all depends on how much equity you've had to assign to that line.

TABLE 4
EFFECT OF MARGINAL INCREASE IN PRODUCT PROFITS

Product Segment	(1) Increase in R_p/Basis	(2) Equity Multiplier	(3) =(1)*(2)Absolute Increase in ROE
Group A & H	1.0% premiums	6.66	6.7%
Traditional Life	1.0% premiums	1.33	1.3
Universal Life	.10% assets	6.66	0.7
Deferred Annuities	.10% assets	16.66	1.7
Pension	.10% assets	33.33	3.3

Table 5 shows the effect of a 20% reduction in risk surplus. This is where your company has been carrying some high multiples of RBC, and somebody is challenging that by saying, "I'd really like to have my ROEs measured with less risk capital assigned to my line. What would the effect be?" The effect is shown in Table 5. I'm not going to go through all the math because you can do it at home in a very simple spreadsheet. You're going to get higher ROEs because you've lowered your denominator, but the effect is going to be bigger where you had the highest multiplier to start with. You can see you get the biggest relative change with group A&H and with the pension business and not so much relative change with the other lines of business where you had relatively more GAAP differences.

TABLE 5
EFFECT OF 20% REDUCTION IN RISK SURPLUS

Product Segment	(10) =(9) Revised ROE	(11) Original ROE	(12) =(10)/(11)-1 Relative Increase in ROE
Group A&H	17.0%	15.0%	13.3%
Traditional life	15.6	15.0	4.0
Universal life	15.6	15.0	4.0
Deferred annuities	16.3	15.0	8.7
Pension	17.4	15.0	16.0

What if you decide that you want to change the level of agents' compensation? In the pricing world we've been kind of taught, especially with Shane Chalke's pricing model, to say that if you trade off production for compensation, you get to some optimum level, and somebody may look at this and say, well, if you can get the same GAAP percentage of premium or the same GAAP ROA results from two different compensation schemes (in other words keep the same profit ratio, even though you have different compensation levels), then you shouldn't have any

change in ROE. However, you actually do because when you assign more equity by having higher DAC, even if you have the same profit returns, you're going to reduce your ROE. You'll have significant reductions here where you have the higher compensation schemes, and the higher GAAP differences that arose from deferred policy acquisition costs.

What are some of the implications? For traditional and universal life type business where you have pretty high equity requirements, ROEs are going to be limited to a small range near the earned rate on invested assets. It's going to be difficult to get enough higher product return to leverage that into significantly high ROEs. Of course, this is where the bulk of many companies' business is, and this is one of the reasons why we, as an industry, are burdened with fairly low ROEs compared to other industries that have lower equity requirements. You may well be tempted to get into deferred annuities and pensions, especially for pension business where there are very low GAAP differences and pretty low risk surplus requirements. That is true because when those equity requirements are low, you have a better chance of superior ROEs, but you're not guaranteed them. You at least have the running start of your baseline at 7%. You can go up from there. It's a very competitive world, but it is possible to get pretty good-looking ROEs out of that line of business.

When you get to something like the group A&H, you have highly variable loss ratios, and expense ratios sometimes get a little bit out of hand. Your profit ratios really vary quite a bit, and you have those variable product returns with relatively low equity requirements, and your ROEs tend to fluctuate quite a bit, which is something that you need to be aware of. I've seen on one company something like a 45% ROE on group health one year and then the next year practically zilch just because they had extremely favorable morbidity experience one year. It kind of reversed itself the next year. I leave this group A&H to those of you who are brave at heart and believe that you can have stable, sound, product returns which is another way of saying you live by the sword and you die by the sword. Either you make it big or you can hurt yourself quite a bit.

I just want to leave you with a feel for where we are as an industry. I went looking at the Fortune 500 Web site. They have a wealth of information there. They had the 1997 results out there. They had 24 companies in the life insurance segment, 18 stock companies, and six mutuals, now reporting on GAAP. Those are also being included in there. For those stock companies the median ROE was 14.1%. For the mutual companies, it was 8.6%. It's a little bit bigger spread than I've seen in the past, usually it's a little bit closer than that, but, of course, mutual companies probably should get lower ROEs than stock companies because they're measuring their results after payment of dividends to their owners, where stock companies are showing their results before payments to their owners. The policyholders are the

owners of the mutual company. Also, some people would say that the mutual companies have a bigger margin to work with in the first place because they're charging some redundant premiums and then paying them back at the end of the year, so there's less risk involved. In today's competitive world where those participating policies are competing with universal life and other types of products, that's probably not quite as true as it used to be, but it gives you a feel for what we're looking at out there.

Before I turn it over to our next speaker, I'd like to take one more poll. How many of you are living with ROE targets of over 12%? And how many of you are living with targets of under 12%? You're all mutual companies, right? Okay. That makes sense, but when you have a line of business that isn't really a participating line of business, like universal life, like pension business, you really need to be searching for the higher returns because you don't have the margins there, and you need the higher returns on those particular things. Now I'll turn it over now to Tony to talk about a case study on looking at sources of earnings.

Mr. Anthony J. Tokarz: My own response to this session's lead question, what does GAAP tell us?, would have to be, overall, not much. In my opinion GAAP financials that we all deal with really need to be dissected and rearranged to provide something meaningful, and that dissection and rearrangement essentially is the source of earnings that I'm going to talk about. I'm going to present a study that's based, to some extent, on actual or live results, and it's really nothing earthshattering or complicated. Some of you might actually be doing this, but in my experience in GAAP auditing and also in the preneed financial reporting arena, I've rarely, if ever, seen one performed, especially in the arena of traditional life.

Before I get into the live example or semi-live example, I'd like to give you a little bit of background on preneed and final expense, and the lines that I deal with. Preneed insurance in general is life insurance that's used to fund prearranged funeral contracts. In general, on the preneed side, the benefits in the contract are actually assigned to the funeral home in a lot of cases. Final expense, on the other hand, is something that's sold on a more conventional basis, and so it has probably a lot more features of traditional life insurance that all of you are a little more familiar with.

I'll go into a little bit of detail on the product characteristics. Preneed and final expenses have become a fairly popular line recently because I think it's driven by the demographics in the United States, the aging of the population, the baby boom curve, or whatever you want to call it. The current preneed market, or the hot market in preneed, is single pay or limited pay whole life contracts that contain nonguaranteed or noncontractual increases in the death benefits. These increases

can range anywhere from 1% to 5%. In a lot of cases, they're driven by the desires of the producer that we deal with. They could be either simple or compound interest. It's generally set up that way to reflect the funeral inflation or expected funeral inflation.

Under preneed, we generally have either a guaranteed issue type of contract or a simplified issue type of contract. In the guaranteed issue case the sales of the limited pay tend to be a graded death benefit schedule; for instance, it might be a $300, $500, and $1,000 per ultimate thousand type of schedule with the noncontractual increases I mentioned earlier following that. Some of those graded death benefits are regulated by states, and South Carolina, and possibly Pennsylvania, have some limits on how low those initial graded benefits can be. Under the final expense line, and this may just be peculiar to my company, we generally have a guaranteed or a simplified issue whole life product; in other words, premiums are paid throughout the life of the contract, and the death benefits do not increase. One of the peculiarities of the line is small average size. I think that's maybe why many people in the industry turn their nose up at it. We're talking about maybe a $4,000 average size for a preneed contract. Final expense tends to be a little bit larger. In my experience, it has been anywhere from $5,000 to $10,000. The block of business that I'm going to illustrate runs at about $8,000.

Commissions generally are varied by issue age. There are issue-age bands. They're expressed, oddly enough, as a percentage of face amount. When we get into the three-pay type and the five-pay type contracts, we tend to have quite a bit of statutory strain upfront. They're not expressed as a percentage of premium, and so you get a little more commission upfront. They are subject, in general, to a charge-back in the first year for any type termination. That includes lapse and movement to reduced paid-up (RPU) or extended term insurance (ETI) if the contract allows for it. In our final expense products, the commissions don't vary by issue age, and they are strictly expressed as a percentage of premium, although they are subject to charge-back in the first year.

Lapse rates on the preneed side are very low, especially in a single pay life, and are basically nonexistent. There are small lapse rates that we realize for the multi-pay business or limited pay business, and low rates are basically a result of the contract being concealed from the policyholder because they're really buying a prearranged funeral or they're buying a funeral. They're not buying an insurance contract. On the final expense side, though, because it is more of a conventional sale, we

typically see the general progression of lapse rates where you get anywhere from 10% to 20% in the first year, and they kind of grade down to an ultimate level of 3%, 4%, or 5%.

I'm going to get into kind of the background, as far as GAAP accounting goes, for these types of products, like the *FAS No. 60* or *FAS No. 97* limited pay type approaches where you have a benefit reserve, maintenance expense reserve, profit reserve, and deferred acquisition cost, except in the case of single-pay life. I've kind of gotten the impression that traditional life GAAP accounting has kind of become a lost art because of the proliferation of all the interest-sensitive business, the interest-indexed annuities and the GAAP for mutuals. The one thing I have noticed in recent years is one of the products that has been very popular in the preneed area is a flexible pay type of product where the consumer has a little more control over the amount he is actually paying in to fund his prearranged funeral. I know of at least one case where the insurer has been forced to account for this as if the contract were universal life or interest sensitive. For the most part, I think the majority of preneed insurers are accounting for this type of product on a traditional *FAS No. 97* limited pay or *FAS No. 60* type of basis. I think the excessive flexibility of some of the contracts, when you pair that up with nonguaranteed interest credited to the death benefits, could put some of these products into a universal life type treatment. It's probably going to be determined by the public accounting firms and the auditors.

I've had to deal with the monthly reporting phenomena, just as all of you have. I think many, many years ago, the typical reporting period was annually, and over a long period of time most companies, if not all, have pretty much moved to monthly or least quarterly reporting. That makes results a little bit difficult to interpret when it comes to a annual mechanics-based factor being adjusted to fit into a monthly environment. The example I've had to deal with a number of times in the preneed area is the single pay life contract where we have what's called rollovers or trust rollovers that will have a number or a large number of single pay contracts issued in a single month, and the valuation system is keyed to a mean reserve factor. That tends to distort the results a little bit because you might be throwing in a factor that the policy is six months old when it could be one or two months. There's a myriad of adjustments we have to apply to these annual base factors such as deferred net premiums and the cost of collection, otherwise referred to as a deferred expense; in some cases an adjustment needs to be made for these charge-back items as well. The present value of the charge-backs not yet realized is similar in nature to a deferred expense or cost of collection. It has the opposite sign.

I've also thought that, especially in the preneed area, we need to pay a little bit more attention to moving the valuation system to interpolated terminals with unearned nets or even go as far as actual monthly factors. With the number of on-the-fly valuation software systems that are out there, that may be feasible. We're not storing factors. We're actually storing assumptions and generating those factors from that. The other thing I'm sure you're all familiar with are any special

adjustments and corrections that are made in the monthly financial reporting process that always need explanation. If those can be kept to a minimum, this makes everybody's life easier, especially for the financial reporting actuary.

Let's discuss source of earnings here. The final expense product I mentioned, the whole life product, is obviously subject to the *FAS No. 60* rule, and the expected profit emergence can be broken up as follows. At least this is the way I've approached it. You have a *FAS No. 60* percentage of premium profit which is, in general, a gross premium less a net premium. There's a mortality margin, which is actual versus expected death claims. A surrender margin is actual versus expected surrender benefits. We get into the interest margin. That's basically composed of the interest earned on the assets allocated to the particular line. In our case I think we've stuck pretty much with the statutory reserves as being the assets allocated to the line (we're not allocating any required surplus or target surplus in our statements) less the GAAP interest that's required on the GAAP net liability. That sometimes creates a negative interest rate. You can see for maybe a multi-pay or a whole life product where you have the DAC exceeding some of the various reserve components.

The expense margin equals GAAP expected expenses (commissions, maintenance, and acquisition expenses) less the actual expenses incurred. Overhead maintenance, or you can call it non-GAAP allocated maintenance expenses, is a component of this expected profit, and nondeferrable commissions and acquisition expenses are a component as well, and those both fall to the bottom line. I have kind of a nebulous quantity here I've been struggling with for a while. It is kind of a tabular reserve released or an expected reserve release less the actual reserve release. In some discussions and papers, you'll typically see the net amount at risk used in a mortality margin; in this case, I have not done that.

The same breakdown exists on the preneed side as the final expense. The difference occurs in the percentage of face value that's used to compute the deferred or unreleased profit reserve. The other component, and it should be fairly small depending on how accurate the GAAP model is, is your actual gross (which is the sum of the net premium corresponding to benefit maintenance, DAC, and your unreleased profit reserve) less your GAAP expected gross.

I've been tempted a number of times to take a kind of simplistic approach to answering the questions why did our GAAP earnings turn out this way? You try and rough-cut the explanation by saying, it should be basically a percentage of premium or a percentage of face plus the release in provision for adverse deviation, plus interest on assets in excess of your GAAP net liability. By taking that approach, you're ignoring any significant deviations between the GAAP assumptions and what

has actually happened. This is especially true of a new product or a newly introduced product. That could be a pitfall.

What I've decided to do is take a very rigorous and possibly a ridiculous approach to this source of earnings. I basically start by breaking down the increase in reserve. There are the net premiums. There would be gross premiums, like I mentioned, for the single pay life and the limited pay. Then we add the GAAP interest required on the net liability and associated cash flows depending on how sophisticated you want to get with this. Then the items that come out of the GAAP increase in reserves are the expected death claims and expected surrenders. Tabular reserves are released. There is kind of a benefit of survivorship component. Also actual reserves are released. In the case of the single pay life and limited pay we subtract a uniform percentage of the face amount.

The frustration I experienced in doing this thing would be, for this sample line of business, I pulled in policy level detail for the in-force business on the product, and obviously that can get to be a pretty large file. If I remember right, it could have been as many as 10,000–20,000 records, which is not very amenable to the spreadsheet environment.

One of the data requirements that I had to deal with was that I had to include all the active as well as inactive records in order to get a measure of the reserves released and the status code involved with that so I could group them according to whether they were debts or surrenders. I had to include issue age, issue date, termination dates for the deaths and surrenders. The premiums paid to date were another item that I had to bring in as well as all of the various GAAP assumptions, mortality, lapse, interest, and so on.

We basically went to the familiar retrospective formula for the net liability increase, I'm kind of making a quantum leap by going from this first equation to the second shown below. I might be taking a few liberties and making assumptions, but the reserve increase should be composed of the interest required on GAAP net liability, and then we must apply the in-force business to the net premium factor (that *P* of *t)*, and expense factor and death benefit factors, as well as cash-value factors, etc.

Since,

$$Vf(t) = (Vf(t-1) + P(t) + I(t) - E(t) - qD(t)\,DB(t) - qw(t)\,CV(t)\,) / (\,(1 - qD(t))\,(1 - qW(t))\,)$$

Reserve Increase = I(t) + $INF(t) \times [P(t) - E(t) - qD(t)\,DB(t) - qW(t) \times CV(t) + r(t) \times Vf(t)] - D(t) \times Vf(t-1)$

Where,
r(t) = 1 – [1 - qD (t)] [1 – qW(t)], and , D(t) = units actually terminated during period

The formulas below rehash what I just said. The one thing you'll notice that's different is I'm including exposures that I got from the policy level detail to apply to the actual in-force business to get my additions for the reserve in terms of net premium subtractions, in terms of expense and claims and surrenders and actual reserves released, and so on.

FORMULA 6
INCREASE IN RESERVES BY COMPONENT-DETAILED SPREADSHEET

GAAP INTEREST: I (t) = I x Avg total net liability
GAAP NET PREMIUM: = + expos(t) x P(t) x INF(t)
GAAP EXPENSE: -expos(t) x E(t) x INF(t)
GAAP CLAIMS: -expos(t) x qD(t) x DB(t) x INF(t)
GAAP SURRENDERS: -expos(t) x qW(t) x (1-qD(t)) x CV(t) x INF(t)
TABULAR RESERVE RELEASED: +r(t) x INF(t) x VF(t)

Now we get into the live results, and am I in trouble! There is a loss of nearly a quarter of a million dollars on this line of business in looking at the period of time from January to April. When we picked up some of these data, I was fortunate that we were able to break the acquisition expense and the maintenance expense up into what we call variable or covered by the GAAP factors and overhead. That made this analysis a little more convenient or easier to do. We had suspected in this fictitious line that the mortality was a little bit higher than we had anticipated, and I think we should be able to prove that. I then proceeded to break the actual components of the net liability down into various components—the net premium and the interest required, and commissions, claims, and so on. By using the earlier formulas I came fairly close to that actual increase. It's about 3% off, and, like all good actuaries, to make it work, I just applied that factor to it. That may or may not produce results that are meaningful. I guess it depends on the situation. That factor could distort some of these components. You really have to get in and dig and make sure that this type of adjustment is going to split the component's profit out into meaningful segments.

The actual components of that quarter million dollar loss now break down into an actual positive *FAS No. 60* percentage of profit. It drops out at nearly $300,000 which represents about 15% of gross premiums. In retrospect, it would have been nice to have actually realized some profit on this product.

Investment gains are, again, the difference between the actual investment income and the interest required on the GAAP net liability. The mortality, which is the one thing that really stood out, shows that we're realizing a loss on the death claims of nearly $400,000 which I think translates to about 2.5%, or two-and-one-half in terms of mortality ratio, of actual claims to GAAP expected. Of course actual-to-pricing expected, if you consider the PAD, might be closer to 2.7 times. We have actually a gain on the surrenders, but I think there were more surrenders in the first year where the cash value was zero than we had anticipated in the GAAP factors or in pricing.

The commissions are basically the product of the commission factors or DAC factors including only deferrable commissions and not including the ultimate level. I think it works out to about 3% of premium. The acquisition cost could possibly mean that, since we're realizing a loss on the acquisition component, we may be undercapitalizing acquisition costs, and it's a new line. We might have time to correct that before the calendar year-end. The GAAP expected premium taxes less actual are virtually zero, which probably means that we modeled the gross premiums pretty well. One thing I forgot to mention about this product is the GAAP assumptions assume a 60/40% distribution between male and female rates. In other words we did not take into account the difference between males and females in determining the GAAP factors. We lumped them all into one plan code.

Then we have a nondeferred acquisition cost, or kind of an overhead acquisition cost, that was not included in the GAAP factors. It may be questionable as to whether that can be deferred or not. Of course, that falls right to the bottom line. The last line is the excess reserves released or the difference between the tabular and the actual. That excess might very well be due to the excess mortality and possibly excess lapses. It seems like the whole profit picture has been broken up into a number of hopefully meaningful segments. I'm sure there will be more questions coming out of these results and probably further digging.

Let's kind of compare disadvantages and advantages in the source of earnings analysis that I did. Obviously the resource and time commitment is a big disadvantage to doing this. I noticed that when I went into this, the initial results made very little sense, and there were a number of iterations I had to go through to get this to work. The uniqueness of the reserve formulation from the various packages that are out there could also lend an additional level of complication to actually doing this kind of analysis. Sometimes I feel like there's such a bottom line focus of either ROE or just the bottom line net profits on a block of business that upper management will tend to not consider this a useful tool. It's just too time consuming to get into.

The advantages are pretty self-explanatory. If this can be brought off, you have a much clearer understanding of the profit emergence. You're very likely to uncover a lot of GAAP factor coding errors in this, if they exist, and maybe even some valuation system or financial reporting systemic errors as well. Deteriorating experience, as was clear from this example, could be uncovered a little more quickly, rather than waiting for periodic experience studies. In a lot of cases on-the-fly systems seem to be very readily adaptable to doing this kind of analysis because all the basic assumptions are there, and hopefully some of the valuation detail records are there as well. The business plan models that many of you deal with might be set up to do the same type of component breakdown that I've done here.

Some of the other factors I wanted to bring up or at least remind you of is that the ratio or fudge factor that I used to kind of bring all the items together was, to some extent, arrived at a little bit hastily. There may be a better method in backing into a certain nebulous or vague component of the reserve increase. Another thing is keep in close contact or communicate with your accountants because there may be other adjustments in there that you're just not aware of that may be a component of the net profit. The work could obviously be expanded to do an analysis of the various component reserves rather than just the overall net liability that I've done, but I didn't do it.

Ms. Mary Ann Broesch: Life insurance companies use GAAP as a primary measure of their performance. I think in recent years we've seen a trend moving toward tying an employee's compensation to a company's performance. This isn't just happening at the executive level. It's also happening at all levels. Everyone at my company is included in the bonus structure, and it is based on our GAAP earnings. These performance measures are also critical tools to management in making operating decisions and strategic planning decisions. For example, a company may have a target level of an ROE that it plans to achieve. In the case of a growing company, the company is going to need capital to be able to finance its growth, and it may need that capital from a potential investor. That investor will actually use and compare the ROEs of various other alternatives and choose the one that will give him or her the best return. That's a real live example of how it's used. It's very important.

You are probably familiar with the basic performance measures in GAAP. Earnings are typically presented in the aggregate, and when they are, they give a good indication of the overall absolute level of profits. However, only general conclusions can really be drawn from this information. Just like Tony said, you really have to dissect the information to be able to provide some meaningful management information. We do sources of earnings analysis.

Most companies still price on the statutory basis using return on investment (ROI) or internal rate of return (IRR) as one of their primary performance measures. ROE is mechanically different from ROI, but I think that you can still get a consistent conclusion with respect to ranking the alternative investments. We're not really inconsistent if you price on one basis and report on another basis. I think companies have to go deeper than that, and they have to analyze the sources of earnings to determine why the performance measures did or did not meet expectations. I'm going to call that variance analysis. A company will then compare an expected key component of those earnings such as premiums or claims to the actual.

Just as analyzing the components of earnings is critical to understanding what's really happening, there are many other useful splits that a company may want to analyze to provide additional information about its business to its management. I'm going to take the example of a life reinsurer since that's where my experience is right now. For a life reinsurer, one of the things that we're very interested in is looking at our earnings on a client-level basis. A reinsurer really views its client as a risk management partner, and this could be insurance companies, brokers, or other TPAs. A reinsurer's success really depends on managing its relationships with the client and providing valuable services while making a profit. It's important for the reinsurer to be able to track its profitability by client in order to be able to balance its price and its service that it's providing.

Another useful split might be by product. For a reinsurer each product is negotiated separately so you can actually track the experience by product, and that might highlight why a client's profitability might differ from expected. Product can also mean product type. For example, you might have a yearly renewable term (YRT), and you might analyze your business by YRT versus co-insurance or you might segregate your product types by level term or universal life. You'll do it in the best way to be able to manage that business. For a life reinsurer underwriting type is an important distinction. For automatic business a ceding company does the underwriting. The underwriting costs are really implicit in the pricing mortality assumption. But when you have a facultative case, the reinsurer does the underwriting which means there's really a higher cost to that reinsurer due to those explicit underwriting costs that the reinsurer is going to have. Then you wonder, how are those costs going to be covered? That really depends on the pricing philosophy. Sometimes a reinsurer might look at it and say, This is a service that is being provided to all the clients, so maybe it should be spread across all the clients. Or if certain clients use it more often than others, you can individually charge on usage. It's not real common yet in the industry to charge, but I think the point is, depending on how you price it, you're going to want to be able to look at that. How well that facultative cost is covered really depends on the placement ratio,

which is related to the cases that are accepted by the reinsurer compared to how many they're quoting on.

Another way that a reinsurer might want to slice its business is to look at the different lines of business that it might be in. Traditional reinsurance is the basic business or the core business of a life reinsurer. That would include your typical yearly renewable term products and co-insurance products. There is also financial reinsurance, which includes all surplus relief type deals. Now you have international ventures. The world is really becoming a smaller place every day, and competition is really keeping up globally. There are joint ventures that reinsurers are involved in with other companies. There's also health reinsurance and annuity reinsurance.

You can be as creative as you want when you try to slice and dice your earnings. It really depends on the focus of the management team and what kind of information they're looking for. There is gross versus retained, and what I mean by that is gross is directly accepted business and retained would be the business after any type of reinsurance ceded. For a life reinsurer to be successful, it really needs to be able to offer these jumbo-sized policies to its clients, and it typically will partner with a retrocessionaire to be able to support this service. The experience on gross written business will vary from the experience on a retained block. It's helpful to be able to analyze the components of earnings between gross and retained, and I'm going to have an example that will help make this point more clear. First I just want to list a few things to keep in mind when we're reporting management information.

The first thing you really have to consider is the message. Management information is reported to really disseminate a message. You need to know who the audience is, and you need to know what the question is that you're trying to answer. Sometimes you really don't know, but it's good to have some idea of where you want to get to.

The following example that I'm going to give uses mortality experience of the information that's generated, and the message is whether it's favorable or unfavorable compared to pricing.

Let's talk about pricing. I believe pricing is a major consideration. When you report management information it really closes the loop that begins in pricing. Pricing sets your expectations. You monitor that business, and then you are able to report on it and understand whether or not you hit your pricing results. Whenever possible you want to make sure that the way things are presented is consistent with how it's priced. This enhances the usefulness of the information that's presented. And the last point is on presentation itself. I really believe that the interpretation of

the message depends on how it's presented, and, again, this example will hopefully drive home what I mean by this.

Let's talk about mortality experience. As Tony mentioned, you really have to kind of dissect your business or dissect the different components. I'm going to use a very narrow, specific example by focusing on one component of earnings—mortality. You could also look at this for a particular client or for a particular product. You can bring it down to whatever level of detail would be useful. We're going to just talk about the difference between gross and retained. Experience on a gross-accepted basis can really vary significantly compared to the experience on a retained basis, and a company needs to carefully consider the impact of reinsurance on its earnings expectations. This example can hold true for either a direct writer of life insurance who might cede reinsurance or a reinsurer who would retrocede.

Let's say we have a good year for mortality experience (Table 6). On an expected basis we would assume that we were going to have gross claims of $100, and we would expect retrorecoveries or ceded recoveries of $10 for a net retained mortality cost of $90. On an actual basis, in a good year, you're actually going to see better-than-expected experience on a gross basis of $97 compared to the expected $100. You also have good experience on the ceded portion of your business where we saw $5 of recoveries for a net of $92. The variance is just the difference between the expected and the actual. We have a $3 positive variance on a gross basis, a $5 negative variance on a ceded basis, and that nets to a $2 negative variance on the retained basis. You can also see the actual-to-expected ratios showing that when you look at experience. On a gross basis, it appears that the mortality experience is positive or favorable, but on a retained basis, it doesn't look so favorable. You have this better-than-expected experience on your ceded business that is causing your net mortality to look worse than your gross mortality. Some of you are saying, that's just what reinsurance does. I think that it really depends on the purpose. This should just give you an idea that you would get two different interpretations, depending on whether you report it on a gross or a retained basis.

TABLE 6
GOOD YEAR FOR MORTALITY

	Expected	Actual	Variance	A/E Ratio
Gross	$100	$97	$3	97.0%
Ceded	(10)	(5)	(5)	-50.0
Retained	90	92	(2)	102.0

Now let's say you have a bad year for mortality (Table 7). In this situation we have the same expected $100 on a gross basis, and you expect your ceded recoveries of $10 to a net of $90. In this particular case not only did we have $97 coming up on

the actual basis, but let's just say that we had one, big, $20 million claim that would have caused the actual gross experience to be $117 and your ceded would be $25, for a net of $92. We're actually coming back down to the same net in this example. Your variance on a gross basis is a negative $17 because of the unfavorable experience, but your ceded experience is actually positive because you're getting back that recovery, and your net is still negative $2. In this example, your worse-than-expected experience on ceded business is actually causing your net mortality to look better than your gross mortality. Companies will use reinsurance to try to spread their losses and to show a more smooth and predictable level of experience that way. Table 8 is just a side-by-side comparison of the actual to expected, and we can see that, on a net retained basis, the actual-to-expected is the same at 102%, and on a gross basis, we're looking at 97% and 117%.

TABLE 7
BAD YEAR FOR MORTALITY

	Expected	Actual	Variance	A/E Ratio
Gross	$100	$117	$17	117.0%
Ceded	(10)	(25)	15	250.0
Retained	90	92	(2)	102.0

TABLE 8
ACTUAL TO EXPECTED COMPARISON

	Expected	Good Year	Bad Year
Gross	100	97.0%	117.0%
Ceded	(10)	-50.0	250.0
Retained	90	102.0	102.0

Let's compare the two options we have of reporting these types of results. The first option would be reporting it on a retained basis, and, as we saw, there's no differentiation between a good year and a bad year when you're reporting on a retained basis. There is a negative variance of two in either year, and you really can't tell anything more about it other than that it looks like it's unfavorable. The conclusion you might draw is that mortality experience is unfavorable in each year. Option 2 would be to report it on a gross basis. You can now get that differentiation between a good year and a bad year. This provides us useful information; however, there's one caveat. The piece that we're missing that was there before is this cost of ceding, and only a part of the cost of ceding, the part of the recovery. If you're going to present it in this way, you need to be able to have a separate recognition of that cost of ceding because we're not really changing the bottom line. We're just showing how you would allocate the difference to further dissect the mortality variance into two pieces.

Why would a company want to look at either the retained option of presenting versus the gross option of presenting? Let's take the example of a life company that has significant reinsurance ceded. An example of this might be a company that's writing level term and reinsuring it on a quota-share basis. That's happening a lot these days. That will typically be priced on a retained basis. There's some advantage to being able to use reinsurance, and so the pricing is typically done after reinsurance. As I was implying in the previous examples, you're going to have a smoother, more predictable variance in your mortality line. I think this company would then want to actually report on a retained basis because that's how it actually priced this business.

Now let's take the case of a life reinsurer, and in this case, a life reinsurer will price many more products than the direct writer. They see a much wider range of markets and underwriting characteristics, and so they typically are the mortality experts. They typically will price their mortality assumption on a gross basis. This life reinsurer is also an underwriting expert because it also sees a lot more cases than the typical direct writer in terms of the facultative underwriting it does. By being an underwriting expert, this is what enables the reinsurer to offer this large capacity to its clients. A life reinsurer may actually retrocede part of this risk to be able to support the service of offering that capacity.

In this particular case because this life reinsurer is actually setting its mortality assumption on the gross-expected claims it makes sense to actually report what those results would be. The main point that I wanted to bring out of this is if you were to just explain the mortality explanation, how would it be interpreted? If you were to report mortality on a retained basis, it would say that you had unfavorable results every single year, but you really don't know why it's unfavorable. You don't know if this is a misprediction in the pricing or if the misprediction in the pricing is in the gross mortality experience or if it's in the retained mortality assumption. There's really no way to tell, and that's why it's more useful to be able to split this out into the two components to be able to further find out which piece of that assumption or experience is actually off.

In summary, I would like to say the way that management information is interpreted really depends on how it's presented. I encourage you all to be very careful in understanding what your audience is looking for and to make sure that you're presenting the right message. The second point is that when you report, if you're consistent with how you price, that will really maximize the usefulness of the information presented.

Mr. Jack Greenberg: I was wondering if you might comment on the differences you've been experiencing between your statutory results and your GAAP results on the preneed line of business.

Mr. Tokarz: I really haven't been with the company long enough to comment on that, but I'll make an attempt. Depending on how much new business we generated in a particular year, the strain on especially the multi-pay life could cause a very low level of statutory earnings, whereas on a GAAP basis, there tended to be at least a nominal level of earnings on new business.

Mr. Reynolds: There are also a couple of other bizarre things that can happen. First, it's possible, because of the differences in reserving on these products in particular, to end up with substantially negative GAAP equity which ends up with very unusual ROEs. That's one phenomena that has a complication. Second, you have to be very careful when you manage a company on a GAAP basis, because you're dealing with *FAS No. 97* life products or *FAS No. 97* traditional life products. It is all too tempting to say that you have almost unlimited potential to spend on acquisition costs because they don't drop to the bottom line; they impact the profit reserve. Some careful management of that issue is needed.

Mr. Tokarz: I'd like to expand a little bit on the negative GAAP equity, and I don't know if I brought that up in the presentation. Because the increase in death benefits aren't guaranteed or contractually guaranteed, you have to reserve for them on a statutory basis or kind of an ad hoc or as-credited basis, whereas on GAAP, you don't have to, and that's where a large part of that negative GAAP equity comes from.

From the Floor: I think we found that, in our product line, there seems to be a whole lot more flexibility in what you could do on a statutory basis, and what you could do on a GAAP basis. Some companies, I believe, on a statutory basis have front-ended a lot of their profits by manipulating their reserves which kind of makes for an interesting result in that GAAP results tend to be poorer in the earlier years than the statutory results which are a little bit different than what management is usually expecting to find.

Mr. Reynolds: I have a question for Bruce. I didn't hear what the relation was between mutual company and a stock company ROEs. I'm curious if Bruce or anyone has seen, done, or attempted to do an analysis where you back out the policyholder dividend effect. It seems that there would also be another possibility of most mutual companies having higher surplus. It is kind of unallocated overhead surplus which tends to pull down the equity. That's another big factor that has to be corrected. Has somebody seen an analysis done that way?

Mr. Darling: I think that the current year difference of about 5.5% is a little bit higher than usual. Of course we all know about the Internal Revenue code institutionalizing the difference in returns, the differential earnings rate, and the equity tax between stock and mutuals. We also know that for a couple of years that had turned around in the other direction, and the mutuals were suing for relief and didn't get it. This year, we're seeing a little bit better performance by the stocks relative to the mutuals than we have in the past. I think the difference is probably a little bit bigger than just the difference in dividends, though. I'm not sure about an equity basis. The relative equity in mutual companies is actually a little bit lower than in the stock companies, at least on a statutory basis. I'm not sure about a GAAP basis.

Mr. Reynolds: I also have a question for Tony. The sources of earnings analysis seems to offer some good potential for tracking things like mortality deviation, which is very key. Would you expect to see or hope to see product repricings that would occur on the basis of sources of earnings analysis, or would that tend not to be done until you've completed kind of a more formal periodic mortality study or something to that effect?

Mr. Tokarz: Just to draw from some actual occurrences, I think that the experience studies and mortality studies combined with the source of earnings have caused us to reprice, in certain instances, and so that's going to occur.

Mr. Darling: Even though my topic doesn't include source of earnings, I want to say that I'm a big fan of source of earnings analysis when coupled with ROE, because ROE measures have a real problem. They're not very level with our life insurance accounting. There are a lot of reasons for that, including release from risk on *FAS No. 60*, unlocking on *FAS No. 97*, and just the fact that equity is not a level percentage of the basis year by year. I kind of made that facile assumption in my formulas that this was the case. Maybe it is on a block of business, but it's not going to be true year by year. You have ROEs that jump around quite a bit. You can be meeting your pricing plan and have ROEs that vary by one-half of a percent or one percent. You can't really use basis point precision in measuring results against objectives when you're looking at ROEs.

I think Mary referred to the fact that when you're doing pricing, and you're looking at internal rate of return, your ROEs that you get later are somewhat related to it, but they're not identical to it. Not only that, but they aren't going to be level year by year either. I think that the best way to use ROEs or any measure of GAAP earnings is to have a good model of your company, do a plan, compare your results to the plan, and then dig into it using source-of-earnings analysis to figure out what caused the differences from the plan.

CHART 1
LARGEST INSURANCE COMPANY USERS OF DERIVATIVES

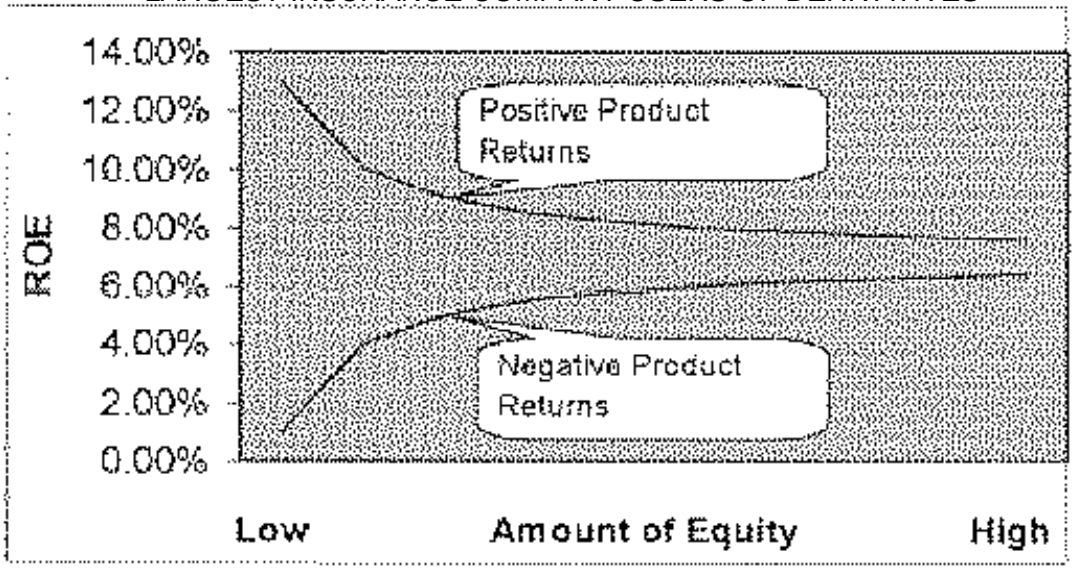

CHART 2
ROEs TEND TOWARD i AS EQUITY INCREASES

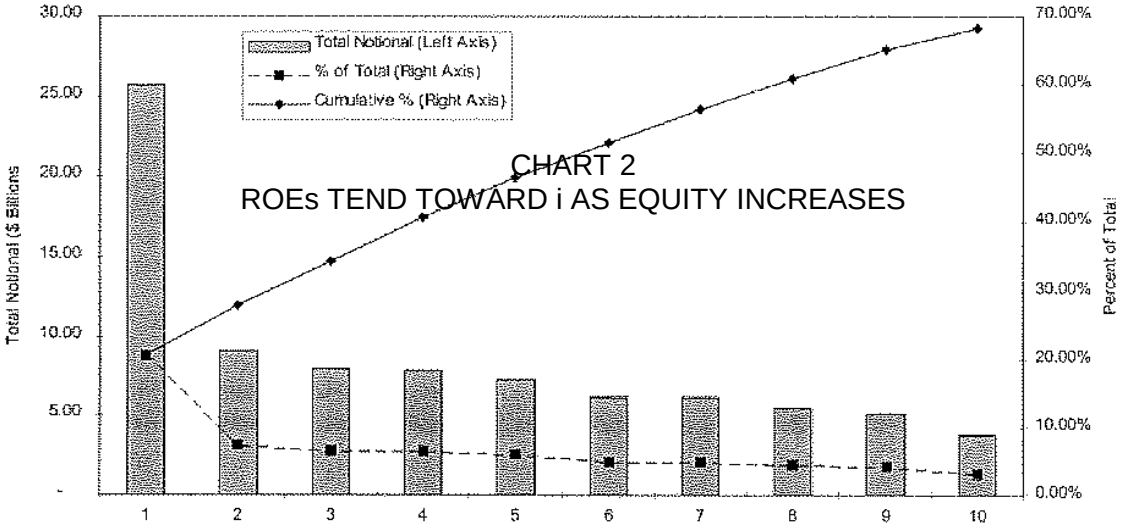

CHART 3
LOW EQUITY LEVERAGES MOVEMENT IN PRODUCT RETURNS

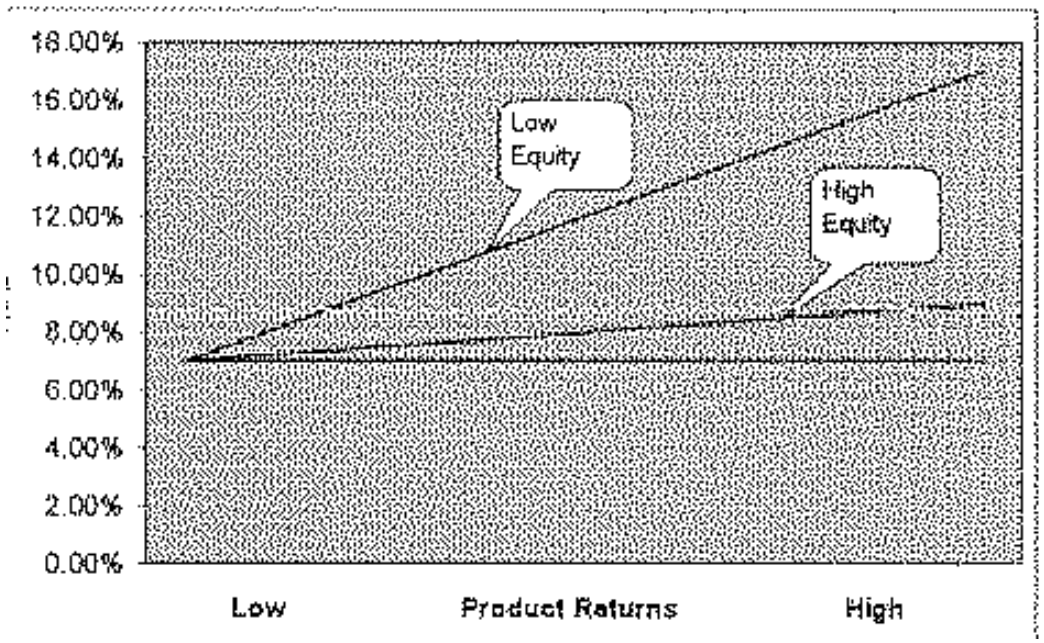

CHART 4
"STATUTORY CONSTRAINTS" MODEL (STATUTORY VALUES)

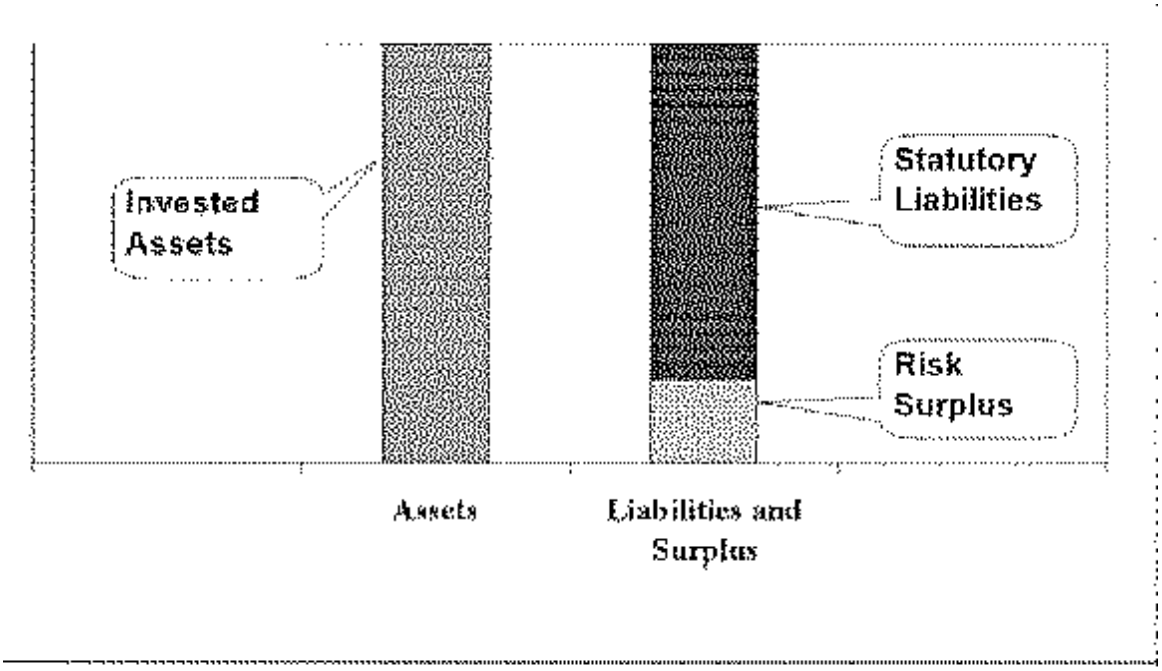

CHART 5
"STATUTORY CONSTRAINTS" MODEL (GAAP VALUES)