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## ANNUITIES: IS ANYONE MAKING MONEY?

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Recorder: CHRISTINE E. ZUPPAS

- o Surrender charges
- o Expense management
- o Interest spread management
- o Asset management
- o Market value adjustments

MS. PATRICIA L. GUINN: I'm from the New York office of Tillinghast. Our topic is annuities, is anyone making money? In that there are many types of annuity contracts in existence, we probably need to focus on a particular type if we intend to present a good discussion (in the allotted time segment) of how to make money with annuities. The particular type of contract we've chosen to focus on are single premium deferred annuities (SPDAs).

First, I'm going to present a general overview of pricing annuities. We are then going to attack our subject from the point of view of the distribution system in that there is a differentiation in strategy for SPDAs by distribution system. Donna Claire will discuss the career agency system. Donna is an assistant vice president and actuary in charge of asset/liability management at the Equitable. Ms. Claire is responsible for asset allocation and is the insurance and investment liaison for all individual product areas including annuities. Harry Ploss will discuss financial institutions. Mr. Ploss is the Vice President of the Financial Institutions Unit at John Alden Life Insurance Company; his responsibilities include annuity product development and financial management. A third distribution system, that of the stockbroker distribution system, will be discussed by John Hele. Mr. Hele is the Business Unit Chief Actuary of the Diversified Financial Services Division of Merrill Lynch Consumer Markets. In that role, John helps to coordinate Merrill's overall insurance activities including both the manufacturing of products and the distribution of insurance products through the Merrill Lynch sales force.

For my overview, I've taken a "vanilla" SPDA and have done some profit testing on it. I've assumed this annuity product to have the following policy provisions:

- o One-year interest guarantee
- o Principal guarantee
- o 10% free withdrawal provision
- o Bailout if rate drops 100 basis points
- o Step rate surrender charges of 7% in the first policy year grading down to 1% in the seventh year and 0% thereafter
- o Commissions of 4.5% of premium

I've also assumed the following profit test assumptions:

- o Issue age 55, maturity age 85
- o \$25,000 average size
- o Acquisition expenses of 1% of premium plus \$60 per policy
- o 1.75% target spread
- o Level lapse rates of 5%
- o Statutory reserve = Fund = Tax reserve
- o 5% target surplus

## PANEL DISCUSSION

In the first phase of my "vanilla" profit testing, I performed a level interest scenario profit test assuming an earned rate of 10% with a targeted spread of 175 basis points. I assumed lapses would be a level 5% in all years and on the reserve side, since the product is a bailout contract, I assumed statutory and tax reserves equal to the policy's fund value. I've also priced on an after-tax basis assuming the current tax law and a 34% tax rate.

In reviewing the profit test results, I first looked at the internal rate of return which was 18.8% after target surplus and after tax. My goal for this rate was 15%. I also looked at value added at 15% or the present value of profits at a 15% discount rate which I'll express as a percent of premium and my answer was 3.4% of premium relative to my goal of 2.5%. Therefore, based on my vanilla profit test, my conclusion is that I'm making lots of money on this SPDA.

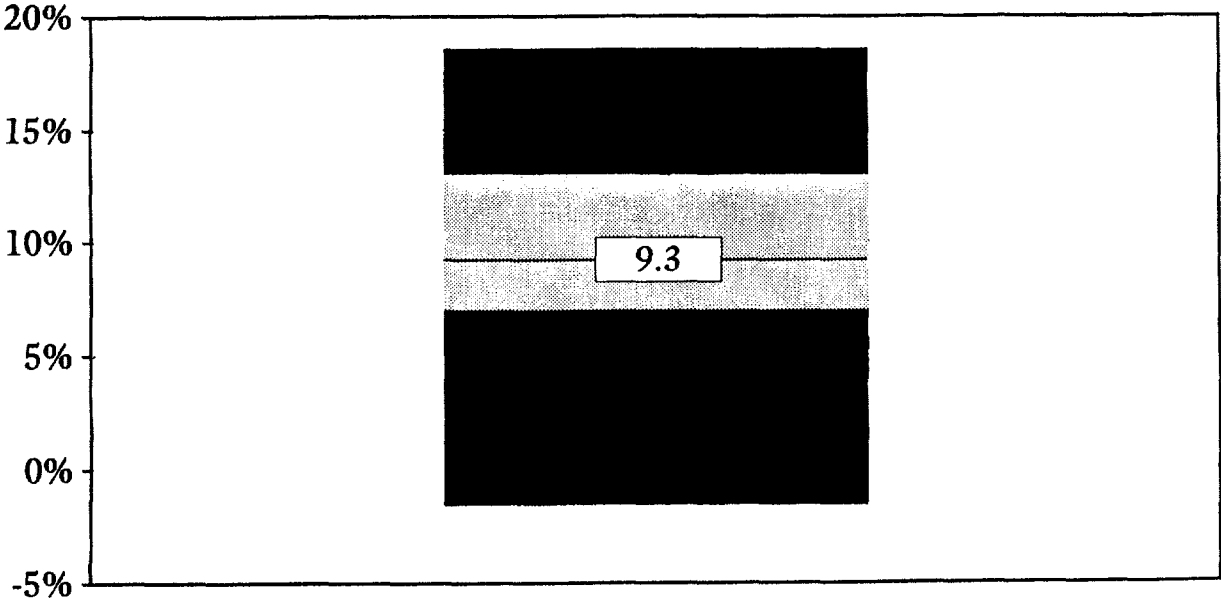
Now let's suppose that a couple of years have passed and I've sold a lot of this SPDA product on which my management had assumed that I was achieving a high degree of profitability. I've been tracking experience and I think it might be time to reprice the product in that some of my assumptions are not proving to be valid. Let's look at what those revised profit test assumptions might be. Let's suppose that instead of having an average age of 55, my age is really 60 and that I didn't quite achieve an average size of \$25,000, it's actually only \$20,000. Now suppose I also figure out that since my SPDA is a one-year guarantee product, most of the time I'm going to have a small amount of excess interest reserves on the statutory side. Therefore, this time around I'm going to price with 101% of the fund value as my statutory reserve. I've also noticed that my earlier lapse rates were quite low. Rather than 5% in the very early years, the rate is more like 1 or 2%. But I've also got an old block of annuities for which the surrender charges run off and I've found that my 5% there was too low. In light of these observations, I'm now going to price with a 10% ultimate lapse rate.

In the first phase of my testing, I ignored the utilization of the free withdrawal provision that was built into my contract. I've since noticed that people actually use it, so in the second phase of my testing I'm including a 15% utilization rate. Commensurate with my new assumed average age of 60, I've realized that annuitization will have a place and will be material for this product and I'm including some annuitization rates that grade up as people get older and are making some assumptions about what type of annuity they will choose. Finally, and maybe the most significant change in my repricing, I'm not going to do a single interest rate scenario test. Instead, I'm going to do some scenario testing and I'm going to have to make some additional assumptions to do that. I'm going to have to make an assumption about my investment strategy, my crediting strategy, the competitor rate that my crediting strategy is driven off of, and also, what sort of excess lapses will result if I'm crediting too far off the competition. In my prior example, I assumed that my investment strategy was to hold 2% in cash and 98% in five-year bonds. I have now varied my five-year bonds a bit by asset quality; I've assumed 40% of my bonds in A-rated holdings, 50% in BBB, and 10% in B-rated bonds. On the crediting side, my target spread is still 175 basis points, but I'm going to pay attention to the competition. I won't credit a rate that's more than 50 basis points higher than the competition and I won't lag the competition by more than 300 basis points. I've also assumed the competitor rate for this test to be the five-year Treasury rate. Finally, on excess lapses, I've assumed an exponential formula that results in an excess lapse rate of two percentage points if I'm 100 basis points off the competition versus a rate of 18% if I'm 300 basis points off the competition (assuming no surrender charge). I also assume that if surrender charges are still applicable and the bailout has not been broken, the excess lapses will be of a lesser amount.

Let's see what the results were under my revised test. First let's look at the internal rate of return. Exhibit 1 graphs the range of results of the many scenarios that I ran with the bottom of the bar being the lowest result and the top being the highest. The white area in between represents the middle 50% of results and the 9.3% bar is the median result. My results range from an internal rate of return after tax and target surplus of roughly negative 1.6% to a high of 18.6%. It's interesting to note that the high result under these revised assumptions approach was less than my level interest rate result of 18.8%. The middle 50% of the results range from approximately 7-13%. Recalling my goal of 15% I now observe the situation to be less favorable than initially anticipated. Let's look at the value added results in Exhibit 2. Again we've got this same sort of schematic. My results range from a present value of profits at a 15% discount rate ranging from on the low side a loss of 5% of premium to on the high side a gain of 1.2%. My median result was a loss of 2.4%. Now given that my median internal rate of return was only 9.3%, and in this chart I'm discounting it 15%, it makes sense that my results are going to be negative.

# *Revised Profit Test Results*

## *ROI*

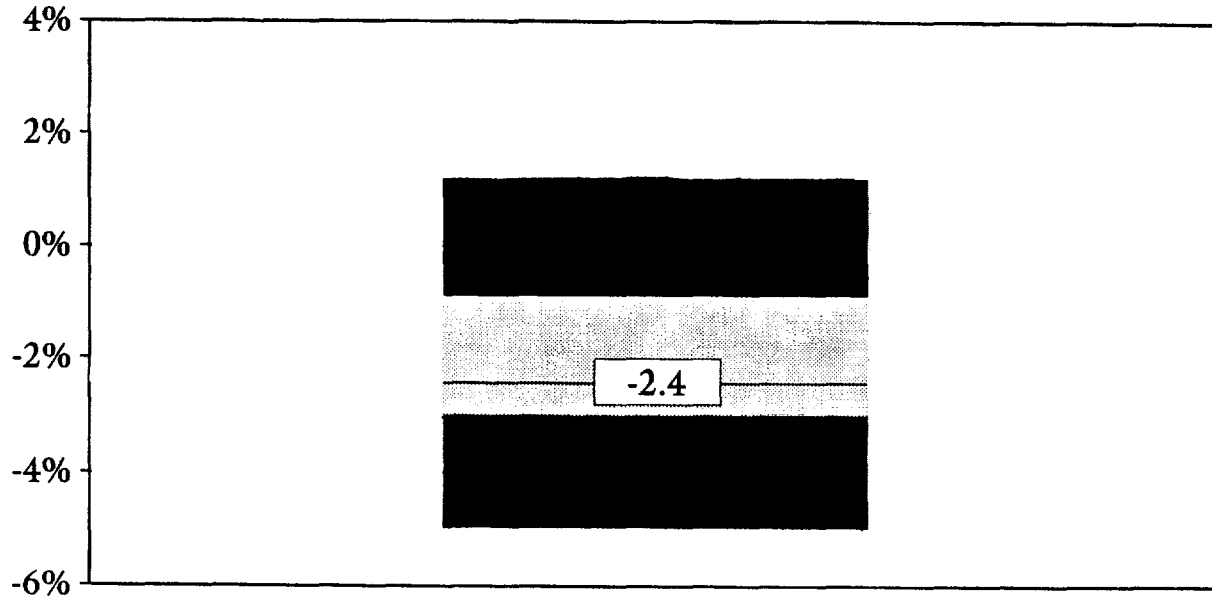


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ANNUITIES: IS ANYONE MAKING MONEY?  
EXHIBIT 1

# *Revised Profit Test Results*

## *Value Added*



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PANEL DISCUSSION  
EXHIBIT 2

## ANNUITIES: IS ANYONE MAKING MONEY?

So, in the end, I go to management. I've got to make a presentation to management now about what I think the profitability of this line is and I'm thinking about what I said a while ago and what I'm going to tell them now. Was I making a lot of money or am I going to make a few cents or none at all? With that as an introduction, Donna will discuss the career agency point of view.

MS. DONNA R. CLAIRE: Is anybody making money? I think there are some companies making money, but very few of them are having profits emerge in the way they were originally priced. I would strongly urge those who price annuities to perform experience studies on their block of business.

There are several reasons why actual profit results may not match pricing results. The first factor I'll discuss is that of age. Some people priced SPDAs assuming one average issue age, such as 58. Sometimes more ages are assumed, but rarely is actual experience checked against pricing assumptions. Actual experience will have a negative impact if it is older than what was priced for in that the pricing does not take into account the additional deaths or maturities that can be expected with an older block of business. Also, surrender charges may wear off more quickly at these older ages. If older age issuances prove to be a problem, two solutions are: 1) to cut the commission scale at older ages to reflect the smaller profitability, or 2) to not issue above the age where reasonable profits are being made. The second solution is similar in consideration to average sizes; there exists some minimum size below which favorable results will not occur, therefore, companies will not issue policies below that amount.

Another issue which is highly emphasized in our company and probably most other companies is that of actual versus expected expenses. Generally, commissions and commission-related expenses are the largest expense items associated with SPDAs. As noted before, pricing to recover commissions needs to be looked at by age in order to make money at the older ages. Another item that sometimes causes problems is the allocation of company overhead. When the SPDA segment is small, sometimes the allocation and the original pricing reflects no allocation of overhead. When the SPDA segment grows, so generally does the portion of company overhead that the products must assume.

Lapses are the biggest area where pricing and actuality have not quite met. Several company representatives I've spoken with commented that 1989 lapses were higher than originally forecasted. This was true in our company also. This was a cause of concern, so further studies were done. One conclusion we've made is that there are certain lapses that actually were not bad. We found that in certain cases the surrender charges covered all the cost of the contract plus providing a small profit margin. We also did a study on 1035 exchanges. There appeared to be one or two agents who were systematically raiding their books of business and transferring to another company. As this other company was not offering superior rates, these cases were referred to their agency managers. When using career agency forces, this is an area which should be carefully watched. A survey of lapsing policyholders was also performed. One area where higher lapses were found were with five-year guarantee SPDAs which were issued in 1983 at 12% which are now being renewed at 8.5%. Many of the people who bought these policies were only looking to lock up their money for five years, so pricing five years ago should have anticipated this aspect. We currently build in additional lapse assumptions on such products.

Another calculation that was done was to compare the cost of crediting 25 basis points more to all policies if it would mean a reduction in lapse rates of 1%. Suppose the amount of business affected is \$1 billion. Therefore, the cost of crediting 25 basis points more is \$2.5 million. On the reverse side, the 1% lapse reduction would affect \$10 million of business. We measured the present value of profits resulting from this segment of total business to be \$200,000. We therefore choose not to change our margins in this particular case.

Considering I'm coming from the asset side, I have to say something about it. Perfect assets, those that match your liabilities, are noncallable, don't default, etc., simply don't exist if you're trying to credit a so-called competitive rate. So you normally have two choices in the matter. One is to go down in quality while the other is to go up in duration. In our case, we've examined the effect of both strategies. The cost of mismatching in duration, at least enough to get to the extra competitive edge, is a lot higher than adding a little bit of enhanced return bonds, as we call them, to the portfolio. If you had a duration bond of 10% and interest rates went up 3%, the market value change in that asset is 30%. The equivalent market value change in enhanced returns is a lot less. There are reasons, especially in the current economy, where just arbitrarily

## PANEL DISCUSSION

going to enhanced return bonds, especially if you're making a big play in them, may not be the best move. But you've got to realize that in order to credit a competitive rate you have to go out on a limb somehow. But the important thing is to understand how you're going out on the limb and make sure, as Tricia showed under the various scenarios, you would be able to live with the downside risks.

Within the last year, on the pricing side, we have moved to asset/liability testing. Generally, this process was left to the valuation actuary who could, after you were done pricing say, "Ha, ha, you really didn't make what you thought you were going to make." That's a stupid way to run a business. We have done studies from the asset and liability side and the level scenario is normally the best scenario in terms of present value of surplus. One thing we have started doing is actually factoring the asset variability of returns into pricing. For example, we'll say that giving this option to the policyholder is equivalent to a put option and we should charge "x" basis points for it. Therefore, pricing actuaries really need to communicate with both the valuation and investment people.

In our testing process, we started with the so-called seven New York scenarios. For those of you writing in New York, these scenarios are the following: pop up, pop down, level 3%, gradually up, gradually down, a cap and a cup. So we've run our pricing through what would happen with each of these scenarios with a simplified asset base. The level scenario is generally the best scenario. We have, in addition, added the historical method. Basically we structured the pattern of interest rates as if the period 1978-89 repeated itself. Also, just for fun, we ran tests assuming a reversed historical pattern. The results of our testing are summarized in the following table:

### SPDA

\$1 Billion Closed Block of In-force Business  
(Amounts in \$ Millions)

<u>Interest Rate Scenario</u>	<u>Present Value of 10th Year Surplus</u>
Level	\$25
Grading Up	30
Grading Down	32
Pop Up	-10
Pop Down	21
Cap	22
Cup	2
Historical	12
Reverse Historical	- 2

As you'll notice, the two historical paths are actually the two worst scenarios. These results show that you really should at least do some testing of the variability of interest rates and that in effect the seven New York scenarios are not exactly extremes; they are really just sort of possible, sort of benign scenarios that should be tested.

Another strategy which we tested was to combine the strategy of selling SPDAs with that of selling some long products, such as immediate annuities. One problem with this strategy is that currently, agents are selling a lot more SPDAs than immediate annuities. But immediate annuity sales do, especially with the aging of the population, fill a genuine retirement need. However, very few companies are currently exploring this market and I think it may pay off for some companies to focus more attention on the immediate annuity product. Another way to get long money into the portfolio is to sell structured settlements. These products have their own risks, but, when balanced against sales of SPDAs, properly priced structured settlements can be quite profitable.

With respect to the two products standing alone, there were scenarios where negative results occurred. In combining the two products, although some variability does result, we did wind up positive in every case that we tested. So, basically I feel we can make money with SPDAs, but we probably can do a lot more in this effort in order to make more money.

The following table shows the results of our "combined" strategy testing :

## ANNUITIES: IS ANYONE MAKING MONEY?

\$1 Billion Closed Block of Interface SPDA Business  
\$1 Billion Closed Block of "Long" Product

Interest Rate Scenario	Present Value of 10th Year Surplus		
	SPDA	Long	Total
Level	25	3	28
Grading Up	30	6	36
Grading Down	32	- 8	24
Pop Up	-10	15	5
Pop Down	21	-12	9
Cap	22	-10	12
Cup	- 2	12	10
Historical	12	10	22
Reverse Historical	- 2	15	13

MR. HARRY PLOSS: Annuities, is anyone making money? Certainly our products can be considered commodities; new entrants with some amount of capital can enter into the market. So, if we're all agreed that annuities are an easy place to make money, we'll have lots of competitors and it will be very difficult to actually make money. The competition frequently comes in at very high rates, as perhaps you've seen in advertisements in newspapers, such as 10% interest and 10% commission. As these competitors get volume, they get discipline.

We therefore need to operate within the arena of the competitors and I'll consider competitors to be analogous to drivers on a road. Automobile accidents account for half the deaths in the United States from accidents and yet we continue to drive. Likewise annuities have gone from a specialty product to a mainstream product. We all want to have an annuity product on the market. Distribution systems are the roads that our car is driving on. The car is the product and our desired path is that which leads to a profitable, stable, growing line of business. Not all of us will get there.

Distribution systems can add value by approaching a special group of customers and providing special services to them. Basic economic theory dictates that you want to be on a different road than most of your competitors. Certainly some roads are known more for reckless drivers than others. So you want to have a good, solid, stable distribution system, hopefully one that will distribute your product regardless of whether you're the most competitive player at the current time. Good distribution systems operate in niche markets which may be a special group of customers, special services, or maybe something unique to your particular approach. The competition is the other drivers and if you watch the other drivers you may see unexpected behavior patterns. For instance, similar to one driver weaving in and out of his lane, sometimes with our annuity competitors it seems as though they raise their rates or lower their rates during periods of capital market stability. Has the actuary been on vacation one week and the marketer on vacation another? Have they shifted their pricing formulas? I think that you need to look at your competitors since it is a necessity for your salespeople. Your salespeople basically have one question, can I sell this product?

You need to look at your competitors to see what capital they need to do what they're doing, what strategy they utilize on renewal rates, their investment strategy, etc., so that you can communicate with your marketing people from a broader perspective as to what your company would have to do to match the competition if you choose to be riding on that particular road. Safety is very important. We tend to be defensive drivers. Certainly the other driver gets into accidents and raises our insurance rates, and likewise, competitors can go insolvent and raise guarantee fund assessments. Therefore, focusing on the competition is an essential process to help assure a safe ride.

Asset/liability management is a protecting force in earthquakes or heavy rainstorms; it sustains the interest rate increases that cause rumbles in your market. Different competitors will have different positions in asset/liability management. Not all of them will adhere to strict actuarial behavior. We see some competitors investing in 15-year bonds and other kinds of assets that, according to the strict actuarial models, pose some uncertainty with respect to annuity liabilities. Whether these assets can really sustain adverse market conditions is questionable.

## PANEL DISCUSSION

Now I'll turn to a distribution system that John Alden began using a few years ago; selling annuities via S&Ls. This is quite different than selling insurance through banks in several ways. S&Ls are not as regulated in terms of selling insurance as bank holding companies. In addition, the annuities have a certain similarity to CDs, certificates of deposit. They are tied to an interest rate and can be for about the same amount. There is no underwriting like there is for insurance and because of the bank holding company rules, we can have employees of the S&L selling the annuities rather than having leased space and utilizing separate insurance agents. Certainly we're not the only people who think about financial planning. The S&Ls certainly have been under pressure to reduce assets and increase net worth, i.e., to reduce leverage. Initially S&Ls felt that they were disintermediating, which really meant selling some of their assets. Their view has now changed to that of a more fee income-oriented approach. They've also realized that some of the deposits in the annuities come from other savings and loans and so they've improved their product line and some of their fee income that was not from their own assets.

At one time, annuities were fairly rare in the S&L market, and in a small community one S&L would sell annuities and another would not. Annuities were essentially competing against CDs. This situation seems to be no longer true. The S&L across the street now is also selling annuities and annuities are in an awkward competitive situation of having to compete with both CDs and the annuity across the street. It's important for the annuity product to adapt to the "structure" of CDs and the S&Ls culture in terms of customer expectations. The S&L customers expect certain service, for instance, he or she makes a deposit and gets a certificate of deposit at the point of transaction. Wouldn't it be wonderful if you could give a certificate of annuity when the depositor left? Usually the insurance company's issue times can lag up to more than three weeks and that certainly takes a lot of the spontaneity out of the sale. It extends the prelook period because this period starts from when the policy is received. Certainly the financial control issues of how you can do this remote issue are quite high because the customers are not at the insurance company office, they're customers of the S&L. But these are the kinds of things that you need to adapt to.

S&Ls also set rates weekly. Insurance companies tend to set rates more leisurely. John will later comment on the wide spread in these rates. If you look at different annuity rates, there can be a two point or more spread between the high and the low annuity rates. This is certainly a much wider range than with that of Treasuries and most CDs. So this situation is similar to drivers on a road that don't follow exactly the middle of the lane. With respect to demographics, we've found that when you sell through S&Ls, you tend to be more in the rural areas than you would be if selling through stockbrokers and you also have an older average age, perhaps instead of 55 or 60, you're selling to customers age 65 or 70. These customers are more stable in some ways and more security conscious. Selling to older age customers makes it harder to recover acquisition costs on death. It's hard to determine what you should expect mortality to be on the line, simply because people may buy annuities when they're healthy or they may transfer the annuity to the spouse, so mortality studies in the early years may result in some surprising outcomes. Sometimes we've got the death claim before we've issued the policy. Certainly then there's no problem; it's a decision. Overall, the S&L market has become quite a competitive market.

I perceive there to be four elements of annuities that are significant with respect to competitive growth. The first element is the credited interest rate. I always find it to be remarkable that customers tend to focus on this one number and in the sales process may ignore other product features. Commissions are the second element in being competitive. The third factor is service because through service we maintain a good relationship with our customer, we pay our commissions quickly, and we keep our agents happy. We place a high priority on service and we've gotten favorable feedback from our distribution system. Fourth, I'll consider basic product features. You need to protect your capacity to write new business and your capital. I think you need to not only think about putting profitable business on the books initially, but also about maintaining profitability. You need to consider if you're making it a very difficult job for the repricing actuary. Therefore, you have to very carefully consider policy features. Some policy features will definitely make it very difficult for the repricing actuary, and you can't ignore the impact these features may have in the future. Asset/liability analysis will certainly help. You'll also find that the competitors can affect your asset/liability analysis. If you assume irrational competition at very high rates, your competitive interest rate will be higher and your lapses will be significantly worse, making your product more difficult to manage.



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With respect to product features, I'll first discuss surrender charges. Surrender charges are limited by the standard nonforfeiture law to disappear essentially in ten years. Surrender charges do help your asset/liability management. The rational person does a calculation to see how much extra yield he needs to overcome surrender charges. The less rational person doesn't want to pay any penalties of any kind. Certainly it's a sales impediment for the agent to replace policies with surrender charges.

Interest rate guarantees are an interesting phenomenon in annuity pricing. A five-year guarantee has higher reserves and the company has less of an interest rate reset option and so generally you find an inverted yield curve in annuity pricing. This, of course, is very confusing to both stockbrokers and S&L customers because they're typically expecting a positive yield curve. Typically, five-year guarantee products sell at a higher rate than a one-year guarantee. Of course, in an interest guarantee, the insurance company will pay that rate for that period of time. It's not a guarantee that the policyholder won't die or cash in the policy.

Some of our early products had service charges in our policy. These are very visible to the customer. These charges created a fair amount of policyholder service questions, and instead, we now focus on larger sizes for our policies in lieu of service charges. Donna has already mentioned the importance of larger sizes because they reduce your service costs in basis points on assets. We found it difficult to introduce market value adjustments into our market for several reasons, one of which was that the licensing of our agents would have to include some securities qualifications which we've generally not had. It would also be something that would be more difficult to explain, and generally, the modified guaranteed annuities have not proved to be competitive because the fixed annuities are paying higher rates. Perhaps this situation will change in some time.

Asset management is an essential process in insurance companies. Every company needs a way to pick up some extra yields. Our approach is to write commercial mortgages, to work in niches, and to have faster service. Each company will find a way, perhaps with high-yield bonds or other enhanced return vehicles. This is an important skill in relation to remaining competitive in the marketplace. Our orientation is more toward total return than yield to maturity. That is, we want to be able to maintain the spread on our annuities over the life of the annuities regardless of what happens. With a high-yield bond you initially have a fine spread to your initial credited rate, but you may be subject to default, downgrades, and refinancing. It's the total return that we're looking for, and we tend to have a value-oriented approach in buying our fixed income instruments. We've generally avoided options and futures, not only because of the accounting issues, but also since we haven't seen an opportunity to really pick up yield and spread on an option adjusted basis. When new products enter the capital markets, we certainly evaluate them, we find some of them to be attractive opportunities. Overall, we have a relatively simplistic asset management approach that has worked well for us.

MR. JOHN C. R. HELE: When Tricia asked me to speak about the profitability of annuities, I thought I'd first talk about stockbrokers from a bigger sense, i.e., is anyone making money selling annuity products? Is anyone making money manufacturing the products? Are the clients getting a good deal in terms of other financial products?

I would initially like to point out that stockbrokers aren't called stockbrokers anymore; they're now called financial consultants. You really can't make a good living anymore just selling stock. At my firm, Merrill Lynch, we're very committed to insurance. We have 10,000 of our 12,000 financial consultants licensed to sell insurance. We have 125 regional insurance specialists across the United States that support the financial consultants. We own two insurance companies that manufacture products. We have a reinsurance agreement with a third company and we have about \$11 billion in assets in insurance. But to put that in perspective, at Merrill Lynch we have \$330 billion of clients' assets that our financial consultants advise on and control within the firm. So although insurance is a very important line, it's just one product line within a wide range of financial products.

I'm going to discuss what we refer to as production, commonly called sales. I'm going to review with you the brokerage environment, the stockbroker's world, and the competitive environment of annuities in relation to other financial products. I will then discuss product design and its influence on what happens within the stockbrokerage world.

## PANEL DISCUSSION

I think my key message is that the distribution system surrounds the client and you have to get your product through the distribution to the client. You have to clearly take into account all the things that will happen through the distribution system. When you're driving down that road, try to analyze the road a bit and all the other drivers on it. Do you really understand how the product's being sold? I'm curious as to how many of you have actually been on a sales call? How many of you have actually observed a sale being made and do you understand the features that actually close the sale? Are you gathering your data for your assumptions from the Vice President of Marketing or are you actually trying to look through that and understand what actually may be happening? I'm focusing on stockbrokerage distribution, but a lot of these concepts can apply to any distribution channel.

As far as annuity production goes, 1988 results demonstrate that stockbrokers can definitely sell annuities. Stockbrokers sold about \$8 billion of annuities in 1988, primarily single premium deferred annuities. This amount corresponds to approximately 40% of all annuity contributions according to Life Insurance Marketing and Research Association (LIMRA). The annuity line has been a very successful line and we anticipate this success to continue in the future. The stock brokerage sales, within that \$8 billion amount, are primarily split by the top five firms. At Merrill Lynch, we sold \$1.9 billion of annuities last year, which corresponds to a 24% market share, followed by Shearson and some of our competitors. For 1989, according to LIMRA, sales are up about 13% over 1988. With respect to profitability, the \$8 billion of revenue which stemmed from stockbrokerage sales produced a 4.5% gross commission paid, which results in approximately \$360 million (\$266 million to the top five firms). These sales are thus a very good source of revenue for the stockbrokerage firms and are a relatively steady stream of income in that annuities can be sold consistently year round (i.e., seasonality is not an issue). You can sell greater amounts of annuities when rates are higher. I therefore think the stockbrokerage firms are definitely making money from annuity sales.

I believe that you really have to understand your market. You have to understand your client, but you also have to understand the distribution system. In understanding a market, the first step to perform in market research is to think about the environment in which you operate. To understand the stockbrokerage environment, you really have to understand the lingo of the trade. I'm going to take you through a very short stockbrokerage dictionary now and talk to you about some of the key phrases.

The first key phrase that's very common is called production credit, otherwise known as PC. This is the amount a broker is credited after a sale. This is how much he gets every time he sells a product. For example, an insurance company would pay the stockbrokerage firm 4.5% on an annuity and that brokerage firm may credit to the stockbroker 4% PC. Production credits vary significantly by product. With respect to CDs, brokers may get 60 basis points of the sale, with mutual funds they may get 5%, with stocks they may get 6%. The key thing to understand is that brokers every year have to produce PCs. They have a goal to meet. This is the revenue for the entire firm and it is a transaction-based revenue. The stockbrokers can measure their revenues on a daily basis by totalling their tickets and calculating their PCs. This form of daily "measurement" is very different from the insurance business where profitability is determined many years later. Suppose a stockbroker sells a \$25,000 annuity. Assuming a 4% PC credit, the PC would be \$1,000 which is a fairly large PC. The average PCs are usually in the range of \$200 to \$300. Therefore, an annuity sale represents a substantially large PC, i.e., a very good size ticket.

What's really important to the stockbroker is how much he gets to keep of the PC. This amount is determined by a payout method commonly called a grid. The determination of the retained amount of the PC varies by company, but let's consider a hypothetical example. Let's initially assume a 25% payout. That would mean that if a broker produces \$200,000 of PCs in a year, he's going to make \$50,000, 25% of the PCs. The rest of the PC is used to cover the overhead costs of the firm. Some firms pay out higher percentages than others but the brokers have to pay more of their own costs. Some companies cover all the costs and therefore pay out a lesser percentage. Typically there is a grid which results in higher payouts (higher percentages) for increased sales, that is, the more you produce, the higher payout you get. For example, if you produce one million dollars a year, you'd have a 35% or 40% payout. Thus, the brokers everyday can simply add up their tickets and apply their applicable payout percentage to quickly determine the results of their daily transactions.

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Another key term in the brokerage environment is liquidity. Liquidity is thought of in a different sense in the broker's world than it is in an insurance company. The broker's concern is with the liquidity of his clients' assets. How tied up are these assets in investments? Are they locked into CDs that have charges on them if you cash out early? Are they locked into mutual funds? Are they locked away into annuities with surrender charges or in insurance products that have 10- or even 20-year surrender charges? A broker everyday looks for opportunities. He's always watching the markets. He's looking at the stock market, the bond market, interest rates, and special offerings of products that may be becoming available. He needs to diversify his clients' assets and gain exposure to different environments, i.e., to allocate a portion in bonds, stocks, and maybe in both long term and short term assets. Within these categories, the broker would then select specific assets for his clients. The element of liquidity thus relates to the amount of client funds available for investment by the broker. Clients always have some money coming due that is liquid to invest in special offerings and products.

Another key word in the brokerage industry is velocity. The concept of velocity was an extremely important measure in the brokerage environment many years ago when brokers were selling primarily stocks and bonds. Velocity is the turnover of the assets of the firm. If you're in a transactional business, the more you turn over the assets, the more money you make. This was keenly measured and still is, but a lot of the stock brokerage firms have trouble with velocity because it increases significantly in a full bull market and really declines in a bear market. As a result, a lot of firms are getting into the asset management side, commonly called fee based revenues. The managed funds essentially work around the clock for the firm which is quite different from the daily transaction based revenue concept discussed above. An example of fee based revenue is that of investment management fees on mutual funds. Another good example is that of insurance; it gives you profits, as we like to say, Saturdays, Sundays and holidays. That's very different from what has historically occurred.

The most important term in the stockbroker's environment, which I've saved for last, is the stockbrokerage book. It is the broker's client list and encompasses all his contacts that he's made over the years. It includes how much money each client has invested, where it's invested, and an analysis of the clients' total holdings. The broker closely guards his book; it is the most important thing he has.

The "dictionary" I've presented seems quite simple here, but is actually very important. Is anyone making money? Is the broker making money out of all this? The broker comes in every morning, he wants to write some PCs. He's looking at his clients' portfolios and seeing what money is coming due. He's looking at market opportunities, i.e., how the stock market is performing on a particular day, and he's looking at products. There's a little screen that's on every stockbroker's desk called a Quotron. The broker can see all the products, all the rates, and watch the market every minute. The brokers really are informed and they're watching their clients' money. They will inform their clients when a good opportunity becomes available. For instance, a broker may call a client if a good opportunity in annuities is perceived such as an annuity paying 8.5% interest. This product will provide the broker with a larger ticket size. The downside is that it is less liquid; it's locked in for a longer period than other products. However, annuities are in actuality ideally suited for a lot of the clients of stockbrokerage firms who are typically in their 50s since it's a great retirement planning vehicle.

Annuities compete against themselves and also against a wide range of other products within the stockbrokerage world which I'll now discuss. As Harry mentioned before, the wide range of annuity rates never ceases to amaze me. For example, for an annuity with a three-year guarantee, the guaranteed interest rate ranged from a low of approximately 7.3% to a high of roughly 8.6% in the fourth quarter of 1989. I've always been amazed by this. All of the products encompassed in the range have different features; different surrender charges, bailouts, etc. But if you really analyze the range of possible rates, you've got to really wonder whether the product features justify it or whether different pricing actuaries are looking at the world in very different ways. The true competition for annuities is, in the stockbrokerage world, among various money market instruments. A comparison of one year guarantee annuity rates in relation to various competitor instruments is as follows: CDs as of 10/19/89 were paying about 8%, money market accounts were paying 8.5%, and U.S. savings bonds were paying 7.8%. If you placed your funds in bank money market accounts, you would earn roughly 7%. Annuities were crediting 8.3% on the average. The tradeoff with annuities is that investment income is tax deferred but liquidity is lost. But the

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annuity product is an ideal retirement planning vehicle and the broker gets a higher PC than what he would get selling a CD.

Beyond the financial vehicles already mentioned, there does exist further competition for annuity products. At Merrill Lynch we have approximately 150 products. You can buy good old IBM stock, other stocks, bonds, and commodities, as well as other very specialized funds that are coming out. You can invest in closed-end bond funds, prime funds, mutual funds or unit investment trusts. Thus, there's really a whole range of financial products and you have to understand what's happening in the capital markets when you're pricing annuities.

Now turning to profitability results from the client perspective, I do believe that clients are also making money in the annuity products. They're getting a very good return on annuities. Further advantages of this product are that it's a good tool for the long term investor, investment income is tax deferred, the account value is at book value, and overall, it's a safe investment in that you get guaranteed interest rates for one, three or five years and sometimes longer. So it really seems to be a great product and that's why it's been selling very well.

What does all this mean to product design? Tricia showed us some large variations that can result when you change a few assumptions. Clearly, the factor that causes the largest variation is disintermediation. Since 1987, one-year Treasury rates have ranged from 8% to 9.5%. The yield curve has been flat for most of 1989, but rates are overall much lower in relation to rates a few years ago as in 1983 and 1984. On a total return basis, insurance companies should be doing great. The clients have been getting a great deal since 1984 in that they've been able to lock in very high rates of interest. The brokers have been doing fine because they can pick up the phone and say rates are dropping and advise their clients to lock in at the guaranteed rate for a period of time. Therefore, everybody's been doing great. But my advice is that if you're not making money now in annuities, you'd better really be worried about the future.

One of the key features you want to keep in mind when you're pricing annuities for your distribution system is the surrender charge design. Remember the feature about liquidity. Brokers don't want to have their clients pay a surrender charge. When the surrender charge period is up, it's free money and you've got to really think about how you're invested at that point in time, as well as what your lapses may be. I know we can look at historical results and observe that things have been really good and we haven't had big surrenders even though surrender charges have been applicable. But what about the future?

Bail-out provisions are another very common product feature. Bail-outs are relative. For instance, consider an annuity investor in 1984. Interest rates declined significantly during 1985 and 1986, and subsequently, the bail-out rate was broken. The annuity holder can therefore cash out at any time but would probably elect not to do so since alternative investments during a declining interest rate period would be yielding less than the locked-in annuity rate.

Given the product features mentioned above, the product actuary must consider the downside effects of interest rate movements. Reviewing the pattern of interest rates over the last several years, we observe that rates were roughly 8% in 1978 and had been relatively stable over the previous two- to three-year period. In 1979, the yield curve became inverted. Interest rates hit double digit returns and soared up to the mid-teens over the next four-year period except for an aberration after the 1980 presidential election. Therefore, if you sold an annuity guaranteeing 7% in 1975 or one guaranteeing 8% in 1978, what would happen as a result of a 600 basis point increase in interest rates over the two-year period in years 1981-82 as your surrender charges wear off? Certainly most policyholders would cash-out. This interest rate pattern may not occur again, but, maybe it will. Therefore, the pricing actuary must truly communicate to management the effects of interest rate variations in terms of earnings, capital and returns.

One very simple way that we've tried to communicate the effects of interest rate movement is to consider one interest rate path and to show what it would mean in terms of GAAP earnings. For example, we assumed a pattern of a 4% rise in rates over two years and level rates thereafter. The result of this pattern was that in years one to ten you have lower earnings because of extra disintermediation. You get higher earnings after the tenth year because you are now in a higher interest rate environment and with the people who are left, you are getting more earnings. A more realistic pattern to test would be to assume a rise and then a fall in rates. An even better approach is to perform value added pricing or random scenario testing for interest rate pricing.

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The best approach is to actually use economic scenario generators that can reflect shifts in the yield curves and take into account where you are in the yield curve. If your current environment is reflecting 16% interest rates, you're probably going to go down more than you're going to go up, and if you can get an economic scenario generator that can follow the paths, that's even better. Instead of assuming parallel shifts in the yield curve, you can use inverted yield curves and show shocks to the yield curve. The trick is to price the market value of your assets and liabilities relative to interest rate movements.

In conclusion, the pricing actuary really needs to consider the distribution system, quantify the risks, and price all the options and features inherent in the products. Is anyone making money? *The stockbrokerage firms definitely are doing fine. The stockbrokers are doing well with annuity sales; it's a good source of earnings for them. The clients have been getting a very good deal and the insurance companies have been doing quite well. Is it going to be the same in the future? I think that if you really understand the risks you're assuming and are willing to incur a loss in earnings for a short period of time and put more capital in, you can make money in this business.*

MR. JAMES R. THOMPSON: I know Mr. Hele mentioned the tendency for the broker to roll the business when the surrender charge disappears, but I've often thought that when you deal with something like a savings and loan, especially when they take on the annuity line because of leverage to improve their financial position, when the surrender charge disappears, wouldn't it be a reasonable pricing assumption to assume that those S&Ls are going to do some rolling themselves?

MR. HELE: I think that's always a safe assumption and it's good to have your acquisition costs recovered by that point.

MR. GARTH A. BERNARD, SR.: I find it very surprising that virtually everyone thinks they're making money, yet almost no one is explicitly pricing for the options built into the annuity liabilities. How much longer do we think we could go on making money like this, and are we really making any money? Even on the asset side, using things like high-yield bonds and passing through the additional spread to the policyholders, if those spreads were meant to compensate you for the additional risk of default and you're not keeping it, how are you going to make money? Mr. Hele alluded to surrender charges wearing off. Even if you are doing asset/liability analysis, how are you going to manage the risk? You have large blocks of business where the surrender charges are virtually worn off and no matter what kind of guarantees you give, that money can move at any time.

My question was for Harry Ploss. I'm a little bit perplexed about a comment that you made with respect to some companies changing their credited rates when nothing is happening in the capital markets. When does that happen? It seems to me that something is always happening in the capital markets and sensible, responsible spread management would seem to dictate that one would not see the type of effect that you do.

MR. PLOSS: I think some of our competitors are entrepreneurs with capital and enter the markets when, according to their perceptions, it's profitable. Disintermediation in the future is what we're referring to through our asset/liability studies. But the disintermediation is only seen in the balance sheets when, after it happens, you have reduced spread. For example, if your low credited policyholders leave, you're taking in new money, you won't be able to reinvest it, and you'll have a reduced spread. If your callable bond is called in a downward interest rate environment, again you have reduced spread on the reinvestment. So you see it in reduced spread and that's when these entrepreneurs see it. So we may see it in the future better than the entrepreneurs who come into the market and create the competition.

MS. CLAIRE: I'd like to comment on this. I agree basically with what John pointed out earlier. We have been in a relatively benign environment. There was a paper done by Jim Tilley a few years ago, I think in the *Transactions*, called "Matching Assets and Liabilities," and he came up with the cost of basically a normal asset (the cost of the possible extra lapses in nonbenign environment) of 63 basis points. I doubt very much if anyone is really pricing that high for it.

MR. FRANK J. ALPERT: Both Donna and Harry mentioned explicitly that we have to take investment risks in order to make credited rates. Would either of you care to comment on how

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much additional capital is needed for those investment risks and what that might do to the return on capital?

MS. CLAIRE: We're still studying that question, and as I said, there are different types of risk you take. I mean not only junk bonds but such things as commercial mortgages which have their own risks and agricultural mortgages which also have their own risks. What we're doing right now is studying all these different types of investments and coming up with, in effect, a downside risk and seeing if we can live with it and also limiting our exposure in various categories to the amount, in fact, we can live with.

MR. PAUL H. LEFEVRE: I was glad to hear Donna finally say that many of the big companies have been pricing annuities marginally. We never had that luxury, and since we primarily write annuities, we always had to take account for all our expenses which is always difficult to describe to our distribution sources. But one of the things that came up that I've always brought up whenever I've had a chance is the age and the death benefit question.

For those of you that were in the annuity business in the early 1980s, deaths and the age of the people wasn't as big a factor, because as many as 30% or 40% of our contracts had contingent annuitants and when the annuitant died, someone else stepped into his place and the contract kept going along. As a matter of fact, there were a lot of sales based on generation skipping and things of this sort. All of a sudden the tax law changed and now you've got to worry about the owner. You now have forced distributions on the death of the owner, which in many cases is different than the annuity, so all of a sudden you're having to deal with two lives. I think many companies never worried about the age of the owner, and we started discovering that a lot of money was going out when the 90-year-old grandmother was dying. In some cases, we were foregoing penalties.

One of the things that Donna mentioned was decreasing commissions for older ages. I think companies have done that. Some companies have written their death benefit provision so that you do not waive penalties on death of people at certain ages. We tried commission chargebacks for deaths of people at certain ages. One of the things that we have done is that when the owner dies early and the money is distributed, it is not distributed as a death benefit. It isn't contractually a death benefit, it's a surrender. The new owner, the contingent owner, is allowed to keep the policy so that we do treat that as a surrender. We book it as a surrender, and it does flow through as a surrender. There wouldn't be any commission chargebacks as if it were a regular surrender because there is a choice element involved. Another thing that I'd like to mention, and I think I might be agreeing with John, is that the world is different. You mentioned the term "book of business." The knowledge of the book is a lot heavier and a lot more thorough than it was in business written five to ten years ago. We have business that's out of the penalty period. We have business that was written six, seven years ago and we are not using the experience on that business as a guide to the future because the maturity of an annuity does not mean the end of the penalty period. Maturity is the beginning of the income period. But in the minds of many of the sellers, maturity is the end of the penalty period. We have been through an environment ourselves where the rates that we're paying on renewal of products at this "maturity" are higher than new money rates, and we are still getting significant shock lapse even in this environment.

The last thing I'll comment on concerns the S&L market. My concern in the S&L market is that the maturity of the business, so to speak, can involve much more of the decision at the S&L level as to whether they're going to move or not move that business. In that business I think you do see a change in distributor; "We're going to take out the Keystone annuity and put in the John Alden annuity." A lot of times when that happens, the business that is in force can move and it can move a lot quicker than in the stockbrokerage business where its individual agents are dealing with the individual business.

Lastly, I agree with John that if you haven't made money now, don't try to make it in the future, because with a lot of the companies that have made money in the annuity business recently, it has been as a result of taking risk or of being mismatched long. We don't have any way of measuring whether we're making money; it's just like the pension business. When you deal with a pension customer as a pension actuary and they want to know how much it's going to cost, you don't know that until the last person's dead. It's the same thing in this business.

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MR. JOHN A. ROSE: I believe it was Donna that said she thought that market value adjustments could be acceptable to stockbrokerage firms. I'm wondering if that is the case or not; if there is a market there or does that take away from the advantages of annuities?

MR. HELE: We currently have a market value adjusted annuity that was just introduced this year and is doing quite well because you don't have to be licensed. We have rates up to 10 years. It's primarily being used for longer money, 6 to 10 year money, and we think it's going to do quite well. It's probably going to be a dominant force. Also, variable annuities will probably take off eventually because if you consider people 60 years old, they're going to live to 85 or even longer. If you're simply investing in fixed rates of return, you're never going to keep up with what you need for retirement income and a key area of growth can be with variable annuities which have quite different risk characteristics. But you've got to make sure you have good volume and lots of good money management to be successful here.

