PARTICIPATING INSURANCE AND THE VALUATION ACTUARY

(OPEN FORUM)

MR. JAMES REISKYTL: Welcome!

I will begin our session with some definitions and criteria, then Armand de Palo will discuss our modeling, and give some examples and various sensitivities based on the testing that we have done to date. He will also suggest the point at which cash flow testing will and will not be necessary. Then I will present our conclusions and we will have a discussion period.

You have been hearing about current research and continued progress in applying and understanding the basic principles and tools of the valuation actuary. Most of this discussion focused on guaranteed investment contracts or single premium deposit administration contracts, and I believe we have come a long way. We are even beginning to understand the results and to establish minimum probabilities. Mr. de Palo and I have tried to think about how the principles apply to participating insurance. We think that participating life insurance is fundamentally different than GICs and that the requirements/studies should reflect these differences. We will share our thinking with you, get your reactions and see if you agree or disagree. Basically, our goal is to determine how the concepts that you have been hearing about apply to participating insurance.

We intend to substitute facts for impressions. We have discussed our ideas with a number of people who have agreed that they are reasonable. Some asked if we had done any testing to support our contentions. We now have and will share the results with you.

We believe that true par business written by a mutual company should be considered separately since it is different, and its primary objective is to provide insurance at the lowest cost possible. That can't be done very well if we engage in costly activity that has little practical purpose except to keep actuaries employed. We should do everything that is needed, but no more. Furthermore, as long as we are part of the state guarantee funds, we surely encourage any efforts to strengthen the valuation practices.

It seems that actuaries had barely learned how to match assets and liabilities when they realized that they had to mismatch to price competitively and that mismatching meant taking some risk. So next they realized they had to learn scenario testing to measure that risk. Scenario testing, in turn, suggested that defining acceptable probabilities, which in turn . . . . Bear with me for one analogy. The valuation actuary concept may be a lot like corporate planning within a company. If the corporate planning function really works, the corporate planner per se disappears because the work becomes an integral part of the process. Likewise, if the valuation actuary is effective, he would disappear because pricing would reflect investment strategy and appropriately reflect the risks and vice versa, and his work would become an integral part of the ongoing process.

For a better understanding of why we felt that participating business should be treated differently, I would like to review some fundamentals that will include dividend practices and surplus uses.

The fundamental principles for participating insurance are: First, insurance is to be provided essentially at cost. Second, each class of business is to be highly likely self-supporting. In my opinion that's a key point, and one that's very important to our discussion, because most testing for a participating block of business should occur when you do the initial pricing. If properly done, little subsequent testing is likely to be needed. Third, surplus is to be distributed among policies essentially in proportion to their contributions -- that is, equitably; so if a company has a dividend scale that is not responsive to the changes in experience, this business does not fit within the definition (our definition) of participating insurance.

I realize that the focus throughout the valuation actuary discussion is on reserves, but I don't believe one can talk about participating business without at least mentioning surplus, as well as reserves. Surplus is funds that are available in case of need. On the next point, there seems to be some confusion within the actuarial community. In the old days when we talked about dividends in seminars we used to talk about the surplus required to cover C-1, C-2, C-3 risks. First we determined surplus, then the amount distributable as dividends, but during this Symposium C-1, C-2 and C-3 are suddenly showing up in reserves also. I don't think that you

can look at reserves for the par line of business without looking at surplus. Where do C-1, C-2 and C-3 belong?

The purpose of surplus is to cushion short-term fluctuations -- that is, to cover the risks just described -- to "protect the dividend scale." For example, consider Northwestern Mutual, this year we are paying out over a billion, two-hundred million dollars in dividends. It is hard to imagine any sudden event or occurrence that would totally wipe this out. Surplus covers fluctuations and stabilizes the dividend scale in that it keeps it from bouncing around, which is not news to any actuary of course. Surplus also permits more aggressive investment policy to support the dividend scale and many other things.

Let's go back to the principle of par business being self-supporting. Most of the testing for par business is done before you issue the policy -- that is, when you establish the gross premium level, guaranteed values, assumed interest rates, the cash value method, and so forth. It is at this point that the margins are established, whatever they may be, to insure that the business is self-supporting. Presumably at that point, you may have done some scenario testing or at least some worst case testing to insure that these premiums and this structure was going to be adequate around 90%-95% of the time.

Another fundamental principle is that policyholders assume the risk of variations in experience within the limits set by the guarantees. They expect dividends to change as company experience changes.

Surely classical asset liability matching that is appropriate for the GICs would be a disaster for participating policies. I can't imagine that any policyowner would commend the company for having paid exactly the 4% dividends it illustrated 20 years ago, over the past 20 years! Par business operates under totally different rates and expectations than that built into current guaranteed annuity or cash accumulating products.

To repeat, the par objective is to maximize dividends paid and to pay dividends that reflect emerging experience so as to provide insurance at cost. Thus, the primary focus of asset/liability matching isn't likely to be the guaranteed values, but rather the payments of the highest possible dividends consistent with policyowner expectations -- a most challenging task! To achieve this objective, one should do extensive testing of various investment strategies under various scenarios to determine the optimum length of the portfolio, the best mix of investments by type and risk, and so on. Obviously, many factors will influence the determination, and strategies may and will change over time.

Of course, that doesn't mean the actuary should ignore classical liabilities, in this case policy loans and cash surrenders. Of the two, policy loans have been the most volatile and have the greatest concern. This is less likely to be true in the future since loan interest is becoming largely nondeductible and many companies have adopted direct recognition. Your investment strategy should include sufficient liquidity or cash flow to cover these needs.

The valuation actuary must monitor cash flow. If positive, usually nothing further need be done. If negative, some testing may be required to insure timely adjustments to investment strategy. Liquidity/cash flow must always adequately cover expectations.

When should participating plan testing be required? That depends on the margins built into the product. In other words, it depends on the probability of the plan being self-supporting as long as its dividends reflect current experience. If the plan has a very high probability of being self-supporting, very little or no testing is required. If the product has a very low premium and low margins, then much more extensive testing is required.

If the plan has a very high probability of being self-supporting, it would seem that the only time you would have to do extensive testing would be when the actual emerging future experience is outside of the most conservative expectations tested in setting the original pricing; a sudden, permanent shift of a significant magnitude occurred in one of the experience factors or wildly fluctuating results were experienced over an extended period, and these wildly fluctuating results had quite an impact on cash flow or persistency. Although we have gone through some very dramatic swings in investment results, I don't think that any company has experienced widely fluctuating persistency, nor anything close to that of a GIC -- at least that has been our experience. The work we did for Regulation 126 has totally different assumptions and sensitivity built in for nonpar and par products.

We suggest the following criteria be applied in order to decide whether further analysis is required. I have probably talked enough about the first one by now: self-supporting pricing, minimal guarantees, how adequate are your margins, and so forth. Second, do your dividends reflect the emerging experience? If not, you will have to test. If you are maintaining dividend scales while interest rates are changing and the scale does not reflect current earnings, you probably ought to be testing. Does cash flow cover reasonable expectations? For example, if you would have kept your scale up and, therefore, it doesn't reflect declining experience, presumably your cash flow would be affected. Cash flow is very dependent on the use of paid up additions within your company. Do you have adequate surplus to cover most fluctuations? Do you have reasonable persistency? Obviously, we don't pretend to be able to accurately estimate persistency under each economics scenario. Nevertheless, we have built in some assumptions and tested them which we will share with you shortly.

One must not only ask these questions; one must also determine actual company practice. First, determine policy and then review current practices to see if they reflect the company policy.

Some more questions are: What interest rates are assumed in guaranteed values? What is the gross premium level? Obviously, one can use very low interest rates which arguably would give some margins and then set premiums lower than the net premiums, so you've taken away the margin. Available margins are most important. How

are you selling the product? Is there an insurance emphasis or investment emphasis? For example, single premium life may be sold as both. Are values available on demand? without penalty? Look at the policy loan provisions. Are you using a market loan rate? direct recognition? some aggregate approach? Each of these is a key factor. Do you have other gains available to offset losses? A typical par policy obviously would, but an annuity product would not. Of course, here I am talking about participating life products and participating annuity products -- although the New York State Insurance Department has included par annuity product in its Regulation 126 rules. Is the basis of the investment earnings' allocation portfolio? new money? or a combination? Are the assets diversified? What is their quality? current liquidity? segmentation? investment mix? strategy? All the fundamental questions must be answered. If answered satisfactorily, you will need to do very, very little testing.

Now Mr. de Palo is going to share the results of our initial work. The key assumptions are the lapse sensitivity and the policy loan sensitivity. Before doing so, does anyone have any questions? Any challenges? or support?

MR. ARMAND DE PALO: Basically, we are going to review a range of what the products could do in different environments in order to identify what the four corners of the tablecloth are that we are dealing with; different companies may fall into different ranges. We have done some very extensive testing of products in environments that are much

more extreme than just reasonable, we tried to take New York's 7 scenarios and we also doubled up 5, up 6, up 8 and decreases down 5%. You should try to get a range of products to determine if product makes a difference.

We designed 6 products that we felt were typical of the products currently issued by mutual companies. Product I, shown in slides 2P and 2NM, was a 4% cash value policy basically with New Jersey cash values. Product II, which is shown in slides 3P and 3NM, was a 7-1/2% cash value product with 6% reserves. Product III, shown in slides 4P and 4NM, was 6% cash values grading to 4% after 20 years. We also tested a minimum cash value policy, as shown in slides 5P and 5NM, a 10 pay life policy, shown in slides 6P and 6NM, and a single premium policy, as seen in slides 7P and 7NM.

To further vary these policies, we went on and said that we can vary how much of the dividend scale is going to be based on actual earnings, and how much of the dividend scale is going to be based on current market yield, where current market yield is defined as the average of long-term and short-term yields. We did not test any inverted yield curves at all. Basically, what we tested was either you pay out 100% of what you've earned or 100% of this defined market rate. We wanted to see what would happen under different variations and sensitivity to both lapse and utilization of loan. We found drastically different results under each.

One of the results we found (which we have to look at further) is that when you go through an extreme situation, the method we used to adjust for lapse is basically equal to the difference between the dividend rate and the market rate squared, times the sensitivity factor and extreme cases such as up 6%, or up 8%, the lagging what occurs in the dividend scale causes lapses to approach 100% in some cases. From my experience and the experience of most other mutual companies, even when short-term interest rates rose on universal life contracts to 16 or 17% and many mutual companies have not yet adopted direct recognition, lapse rates of this extreme level were not experienced by anybody. We will see from the analysis that the sensitivity to lapse will prove to be far more important than the sensitivity to policy loans.

We also priced all these products to be fairly typical; they represent no particular company. The design basically makes, on different measures, an ROI of around 10% after tax. The break years for all, except on single premium, as shown in slides 7P and 7NM, are about 10 years. On measure of contribution to surplus per $1,000, they all contribute about 60¢ per $1,000. I would characterize that as a fairly typical product -- that is, one making a reasonable contribution to surplus. We did not yet test the effects of new business. We definitely feel that the model needs to be tested further into the future to understand the effects of new business and the use of surplus for a company, to finance new business, and to create the in force. We took a 1980 CSO policy and assumed it was issued in

every prior year at a sales growth of 10% a year. Thus what we have is a model where there is an established in force of 30 years' worth of issues. We are going to see how those policies run through time.

Slide 1 is relatively simple. It goes through the interest scenarios, including the New York scenarios, doubling scenarios and some scenarios better described as either plus or minus as level interest rates. The investment portfolio is a fairly level distributed investment portfolio where we have such short-term investments and some long-term investments. The actual distribution is shown in Slide 1A. Mr. Reiskytl and I agree strongly that a company which is only investing in 20 years' zero coupons would definitely have to do testing no matter what type of product it has. Slide 2P is a result of a large amount of testing that we did. Now, going along the top, you will see there are two sets of numbers. One is called lapse and one is called loan. The number is the sensitivity of the policyholder and the difference between the dividend rate and the market rate; the higher the number, the higher the sensitivity.

First, we personally tested all the scenarios under 4 combinations where there was no loan sensitivity but only lapse sensitivity. Then we tested under conditions where there was only loan sensitivity and no lapse; then we combined the two. Mr. Reiskytl's company has looked at the historical lapse and found that the number for their company is in the range of .2, or .3 -- was a reasonable lapse sensitivity for their particular company. Obviously, if the company's

product is sold by a different type of marketing force than a career force, a drastically different sensitivity is needed. You may find out that you set your sensitivity close to the number 2 for annuity products.

I think we have covered the range of sensitivity that you expect a company to have. The zeros mean that no surplus was needed as these products ran into the future. The zeros with a date after them mean that the policies all went off the books by that date, and that was due to the fact that there is no cap whatsoever on the lapse assumption. Almost all of these scenarios that drove the business off the books left the company solvent, except the 2 highest scenarios of +6 and +8. Some of those scenarios did end up with all the business going off the books and leaving the company insolvent. Now the model uses a loan provision, so if you haven't a negative cash flow, that it borrows at the higher of either of the long-term range or the short-term range. Implicitly, this model has an extremely expensive loan provision. We kept paying, in general, 3% higher than the short-term rate which is probably excessive and not consistent if you held the line of business when you have internal loaning; however, we wanted to push the model to an extreme and see what would happen at this stage with extreme assumptions.

I would like to show you what happened to some of the interest rates. As you can see in the first line of slide 8P, in a stable, level-interest environment where your basic interest is ranging from 7-1/2%

short-term to 10-1/2% long term, the dividend rate consistently remains around 9-1/2% to almost 10%. Under most of the New York scenarios, the dividend scale accurately tracks the environment and does not trigger any significant amount of lapse. But when we double some of the situation or move to extreme situations like +8, where you see another situation happening. If you look at New York double scenario 3, the dividend scale stayed level for many years and then took a nose dive and paid virtually no dividends after that point. The reason that occurred was that loans will be created by the fact that your lapse rate started approaching 60%, and as the lapses occurred there wasn't sufficient cash flow and you had to borrow, charging the cost of loans against the dividend scale, and you went into a spiral by lowering the dividend causing the lapse rate to go up further. Those are the only problem scenarios we saw. They were both in the range of plausibles, but outside the range that would be considered reasonable.

We then did similar testing of other products. Our 7-1/2% cash value policy is in slide 3NM. As you look at this policy, you see that you still have mostly zeros, you still have results where it all works out; however, when you look at the detail in this policy, you see something that is interesting. Even though it did not need surplus from the valuation date, if you go to the scenario where the interest rates went down, I was expecting to see that there wouldn't be enough reserve there to support the 7-1/2% guaranteed. Yet, what we've discovered is that with the portfolio being relatively long it generated surplus for the first 10 years before the interest rates fell below the reserve rate

that the earnings of surplus kept the policy running even after the interest rate fell below the reserve rate. Obviously, what this means is that each year as you test this policy and the scenario holds true, you will not have that surplus position there and that surplus would have to be devoted to a reserve increase in a later date. So this would be an example where if interest rates did decline, the valuation actuary would have to be looking at some future date, consider strengthening the reserves.

The other policies basically all work out as expected. We saw no problems whatsoever with a 6-1/2%, 4% policy in slide 4P. We then moved to a minimum cash value policy and once again had no problems. Next we looked at what happens to limited premium payment periods. We tested a 10 pay life, as shown in slide 6P, and that also worked without any problems. Last of all, we tested a single premium policy, as shown in slide 7P, which had a few problem conditions. Single premium had some conditions where it was so highly sensitive to lapse that the results weren't favorable. So premium patterns are a consideration as are the level of future premiums due on a block business, but they are not as major a consideration as we would have thought. I would like to go back to the first line of slide 2P. I said that loan sensitivity is not as important as lapse sensitivity, but look at the middle block -- we have all the lapse sensitivity except for zero. We found no situation where the policy went into a surplus negative condition. The reason for that is, the policy, even though they had loans outstanding, still had constant flow of future profits

coming in through the operation of a policy: whereas if a lapse occurs, if you have a deficit, there is nothing there in the mechanism of a participating policy to continue to work.

I am now going to go through the same policies, the only difference being that I set the sensitivity of paying a market rate to 100% market rate and 0% current earnings. The results are slightly different. The numbers in those slots telling you how much surplus was needed to establish as of the end of 1986 to keep each of these blocks in a positive surplus condition at all times. As you can see from this example, under the New York scenarios, very few of these scenarios cause any problems. However, you notice that some of the New York scenarios are missing, such as New York 4. New York 4 is the same as +3. You can see that the New York scenarios do require some surplus or some additional reserve if you pay market rate. The same policy if indexed into a truly interest sensitive policy does require surplus.

Let's look at slide 8NM and go down the .4 and 1.0 column; that is probably a typical mutual company. Basically, what you have here are New York scenarios, plus a few additional ones. The first one is, New York 1, interest rate remains level. When interest rates remain level, if you are paying the market rate, or you are paying your earned rate, they are identical. In the next scenario, we increase 1/2% a year until we ultimately are 5% higher. This product did not have a problem with this slow increase. The detailed results show

that the surplus position of these par policies proved to be worse in an increasing environment and far better in a decreasing environment. This is to be expected, since you are not paying out what is earned, but we are first focusing on having enough surplus. Scenario 3, which is a more rapid increase, increasing 1% a year until it reaches +5% then decreasing, did require some surplus.

In slide 2NM, Scenario New York 5, which is basically interest rates decreasing 1/2% a year caused no problems as did Scenario 6. This is because less interest is paid out in your earnings and the surplus goes very strong positive. Then I doubled the scenarios; I went to double New York 2. You can see the needed surplus went to 8% as needed, and for New York 3 it went to 7%. You may notice all these surplus numbers look almost identical going across. This is because you are paying a market yield regardless of what happened. The model is not generating very much in the way of lapse or loan adjustments because you are always competitive, except that you look at +8 there is a 1-year lag in dividends. Lapse rate went so high because you are lagging 1-year payment. They just went off the books; that's just showing an example that the model is too sensitive to lapse.

As you consider going down, the plus interest rates the surplus needed are as follows: at +2, you need 1% then +3, you need 2%, at +4 you need 4%, at +5 is running around 6-8% then +6 you went up 12%, then +8% you went to 14-15% surplus. Note that when interest rates go up, they are assumed to stay up forever!

Just to show you what interest rates were involved on each scenario, the top scenario New York 1 is paying 1/2 between the long term and short term. You can see that this model is crediting 8-1/2% interest there. You notice that the par model was crediting about 9-1/2%. The difference is that the block is more invested in long term, the true yield proves to be higher. This is because a block becomes older; the investment proves to be long-term as short-term investment withers away. As you can see, most of the other scenarios are the same type of situation. Let's look at some of the same products to see if these products are more sensitive to lapse or credited rates.

In the 7-1/2% policy, shown in slide 3NM, we see similar types of conditions. If anything, the 7-1/2% policy actually needed more surplus under the different scenarios. As you can see, Scenario 3 is requiring 3% surplus and once again we see the same conditions as in a decreasing scenario because so may assets are already invested; surplus conditions just grew. Even though you should be inspecting your reserve, the model didn't go insolvent, which is saying that enough surplus exists there to avoid insolvency. The 6%/4% policy is shown in slide 4NM. A little bit more surplus was needed here than for the 4% policy, but there is no sizable difference. The minimum cash value policy was proven to have no great problems, although some of the results on this policy were strange. I'm not quite sure why. The high interest rate policies didn't have the same problems the others did. Maybe some effects of lapses are getting in there that I do not understand yet. The 10 Pay policy worked out as expected;

we're surprised that some of the scenarios worked out as heavily as they did on this one. Once again, all of these policies, if you are paying a market value rate, or some aspect of it, are needing surplus. They cannot be sold unless you have adequate surplus.

Next is the single premium policy, shown in slide 7NM. As you notice, the single premium policy in this example is unlikely to pay out only what you've earned and need surplus under most conditions. In other words, if I had a single premium policy and you're paying out a market value yield. Every scenario we ran, except decrease interest rate, said you needed surplus. The bottom line of all this is that the company has to state what is its dividend philosophy. I have discussed this with many actuaries in different companies by asking them to tell me what their particular company's dividend philosophy is and how they would react in different economic environments. If your philosophy is that you are paying a market rate regardless of what you earn, neither Mr. Reiskytl nor I are saying you have a participating policy. If you say that you're going to pay out what you illustrated on a block of business where you have illustrated at 12% or 13% you are not willing to lower your scale and your earning decline you are not acting like a participating policy, but those companies will wake up shortly after they start seeing operational gains or negative to realize that they are participating policies; but in the meantime, they'll have very little money. I'd like to bring you back to Mr. Reiskytl at this stage.

MR. JAMES REISKYTL: We realize that Mr. de Palo shared a lot of numbers with you in a short amount of time. The key points I'd like to emphasize are that we started with the New York scenarios. Using Scenario 1 and adding 6% or 8% each year means we are assuming 16% or 18% interest rates forever. Most of us would agree that that's out of the realm of 90% probability. Surely, it would be in a quite different world. And if you're able to see the line labeled +8, in slide 8P, you would see that typically the line failed under various assumptions. This test needs further work because we often failed with a lot of surplus. Unusual assumptions require fine tuning to be remotely realistic.

Furthermore, note that as one moves closer to new money or if one assumed a very high interest rate in the original pricing, the product did not fair as well. In addition to reemphasize, we used a very conservative lapse sensitivity assumption. This factor deserves further study and discussion. We'd like your thoughts.

We have assumed that lapses are a function of the square of the difference between the new money interest rate and the dividend interest rate as Mr. de Palo said. And of course at plus 8 persistency is substantially reduced and as Mr. de Palo observed, you actually run all the business off the books in a limited period of time, although you still have surplus left, needs more work.

Initial conclusions: Like all other valuation actuary testing, these

scenarios are just part of a large universe of possibilities. I hope that those who have par business will go back and do some of their own testing. Frankly, I believe a little extra work now will hopefully relieve us of required extensive testing year after year later.

Slide 9 shows a few summaries in a little different way and draw on them to make a few basic points. Here are the set of New York long-term interest rate scenarios. They are as good a starting place as any others to determine what happens under various conditions. In slide 9, you can see the line that represents the level assumption. Others shown are creep up, up/down, pop up, creep down, down/up, and pop down. Each line on the graph represents a different scenario. The results you're about to see are a little different from Mr. de Palo's. We used a par policy with a 4% assumed rate and other appropriate gross premium margins. We assumed a lapse sensitivity of 0.3 and a loan sensitivity of 2.0, which is very close to Northwestern Mutual Life's experience in the 1980s. This was a turbulent time for new investment rates and our lapses increased but nothing like the models Mr. de Palo showed you earlier. Of course, we did not have 18% interest for 30 years either -- who knows what lapses will be if that were ever to happen. As I'm about to show you, certainly investment strategy/mix is most important as well as the basis for the dividend interest rate. I believe as one moves from portfolio based dividend scale to new money based scale that a company should go to shorter average duration for its investments for similar products. Shorter duration or a different investment mix should enable the

company to be more responsive to investment rate changes. That's the basic point I was trying to make earlier. You ought to do extensive testing, so that your investment strategy supports your dividend philosophy.

In slide 10 the resulting dividend interest rates probably do what's expected, for the most part. The line going right straight across the page represents the assumption of a level interest rate. I guess you can also guess from the pattern of the dividend rates by color what the underlying scenarios are. Note that some kind of creep up, smooth up, or go up and down. In each case they follow the assumed new money investment rates. We've assumed a normal yield curve with the 5-year investment rate about halfway between the 30-day rate and the 10-year rate, and that the short-term investment rate is 3% less than the long-term rate. If you assume alternate yield curves, obviously you would get different results.

Slide 11 shows that the benefits paid vary significantly between scenarios reflecting the persistency and interest rate assumptions.

In slide 12, policy loan results are even more dramatic; they fluctuate all over the place.

Slide 13 bring us to the main point of our discussion. You have seen wildly fluctuating policy loans; you have seen rather dramatically fluctuating benefits, and yet surplus is relatively stable and increasing

in all cases. You probably have difficulty separating results for 1987-92. Everything is positive throughout the testing period. Now, that's no surprise to me. It's nice to substitute facts for impressions. Doesn't that suggest that if the New York scenarios are reasonable ones to use for a par product, any testing of this par product would be a waste of time for the company? I believe you would get similar results for other true "par" products and, therefore, such annual testing would be a waste of the use of valuable resources including valuable talent without enhancing understanding. This policy passes these criteria as expected.

We have tested a couple of other dividend interest rate assumptions, as shown in slide 14. Let me hasten to repeat here, that although we changed the basis for the dividend rate we did not change the under-lying investment mix. If we did, you'd probably find similar but different results. Here are dividend interest rates resulting from a blend of 50% new money rate and 50% portfolio rate throughout. Again, you see significantly different patterns in dividend interest rates.

The projected benefits, as shown in slide 15, have a more stable pattern than the portfolio based ones did under these very dramatically different economic assumptions.

Surplus results are similar but more diverse. All show positive results in slide 16 except for the pop up scenario which shows negative

results for a few years. Alternate investment strategy might help. Surplus continues to grow over this 20-year period under all the scenarios.

Finally, our last slides, 17, 18 and 19, show the results of portfolio dividend interest rates for a 6% assumption product instead of a 4% product. Of course, in this situation when investment rates go below 6%, you have a negative contribution to dividends. Mortality and loading gains are needed to keep dividends positive.

In slide 17, the benefits are dispersed, somewhat like those a 4% based portfolio product and much more so than that of the 50% combination.

The surplus results are all right, as slide 18 shows. They show a positive pattern and generally increase -- although the end results vary significantly! You might ask how is it that under all these scenarios the company is paying competitive dividend interest rates yet their surplus is growing? As stated earlier, there is no new business in these scenarios and so you don't have to deal with the first-year strains. That's the type of testing that New York currently requires for the annuity business.

I have not presented any results for the extreme situations that Mr. de Palo gave earlier -- such as popping up to a very high investment rate and staying there forever. If that were to occur, the valuation actuary would have to do a lot of testing as mentioned

earlier. We believe that it is the exceptions beyond expected adverse situations that need testing, not all the others.

At this point, I'd like to open up the discussion.[1]

We seem to be working on a committee consisting of Mr. Reiskytl and me and we're always looking for input. But we do plan to continue and to write up the minutes of this meeting and additional testing we will do after this meeting. We will distribute the information to anyone who is interested.

MR. DOUGLAS C. DOLL: I am from Tillinghast/TPF&C. You are saying that if this credited rate is going to be based upon what you are earning, then your analysis shows that you are sufficiently protected from the interest rate risk. Is that correct?

MR. DE PALO: We're not saying you are sufficiently insulated, but for reasonable variations, you are. You may still have to put up a provision in surplus for unreasonable variations. A +8 scenario, for example, would show that you could not run a company without surplus, but we don't believe running a company without surplus is realistic.

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[1] Because of a faulty tape recording, valuable comments by Mr. Cody, Arnold A. Dicke and Thomas M. McComb could not be transcribed. The moderators sincerely apologize for this unfortunate event.

Also, I want to go back to basic dividend theory a little bit. The basic dividend theory has always been a retrospective analysis of paying out what is no longer needed in surplus. The whole concept of interest sensitivity, or paying out a market rate instead of an earned rate, is a very, very recent development and not really a development that would let a policy be a true participating policy. Instead, it would move it more into the realm of interest sensitivity, and I think there is a difference between the two concepts.

MR. DOLL: Right. What I hear is that an interest sensitive product may be defined as one that is credited using the market rate. A non-interest sensitive product, on the other hand, is one for which the rate being credited is based upon the earned rate.

MR. DE PALO: That's correct.

MR. DOLL: If you had a universal life product that you are crediting solely based upon what you were earning, then that is not an interest-sensitive product?

MR. DE PALO: It would be closer to what these products are and you could take many of the principles we're trying to develop into account and they're not fully developed yet. However, if you were invested in a 5% portfolio, and the portfolio were to lag, would your company then pay out that yield?

MR. DOLL: So there's some potential here for using this analysis in lieu of cash flow analysis for reserve adequacy. Perhaps, if an insurance company is truly crediting interest on this basis, and if further research shows that this is sufficient to protect the asset liability risk, then perhaps the insurance company could file with the regulatory authorities whatever it takes to demonstrate that that is how they're crediting their interest with the regulatory authorities.

This is a follow-up to Mr. McComb's question about what criteria we're going to use to carve out these types of policies from other types of policies.

MR. REISKYTL: You obviously asked a very good question, but we do not have the complete answer. Often we have been asked: Isn't universal life with portfolio credited rates based on actual earnings just like par? We have not done any research on universal life. I hope this session will lead someone else to pick that up and do a study of it.

We are not suggesting that testing of par business should not be done because you can't write simple black and white rules. I think a consensus will emerge that at best you will do very simple testing, if any, to determine if anything further need be done if your dividend interest rate reflects your earnings and you have adequate margins. Annuities are quite different from life insurance. Hopefully, if we have another Symposium of this sort or another discussion, further

work will be finished and we'll get a better handle on universal life products and par products -- their similarities and their differences.

FROM THE FLOOR: Actually, if you look at the work that was done by Mr. Doll and Mr. Jacobs, you see that an earned rate pay-out strategy does pretty good for single premium products. So it might be that with dividend paying policies, one thing that happens is that the illustrations are tied to the earned rate in the sense that the dividends you are illustrating cannot really be higher than the ones you are paying. If you are paying your earned rate, then you tie everything together. You can see that a company could try to get out of testing. Maybe a company should only be allowed to illustrate the rate that it claims it is paying.

MR. REISKYTL: And I suspect another question is: Are you marketing the policy as "interest sensitive" so that the buyer has a certain expectation of what will be paid, or are you marketing it as a policy paying an earned rate?

MR. CODY: I couldn't help but respond to Mr. Doll's suggestion that you could ever have a universal life policy, with its unbundled dividend scale, providing values identical to a traditional participating policy. I don't think that it would be possible because unbundling requires margins and you have to find various places to get your profit or risk charges. You don't have the same freedoms that you have in designing a conventional dividend scale for a traditional

participating policy. In other words, I do not know if you could break up the Northwestern Mutual's dividend into an unbundled dividend. I suspect you wouldn't have the same thing left after you broke up the factors because you couldn't operate with the remaining factors the way you do now. I just want to be sure that my earlier remarks didn't extend to a universal life policy. The margins are altogether different, do you all agree to that? Another thing is, you're more likely to run into a situation where your unbundled dividend departs from what is considered theoretically desirable.

MR. REISKYTL: Picking up on that for just a moment. Universal life has other features, such as withdrawal rights, that are not contained in traditional policies, and universal life may be flexible or it may have a fixed premium. If it's fixed without withdrawal rights and without this and without that, then it could look more and more like a traditional participating life policy. But even so once it is unbundled, is it really the same? Do you have the ability to offset gains with losses?

Scenario Definitions

NY1:   Level interest rates of 7-1/2% (short term) and 10-1/2% (long term).

NY2:   Interest rates increasing 1/2% a year until they reach 12-1/2%/15-1/2%, then level.

NY3:   Interest rates increasing 1% a year until they reach 12-1/2%/15-1/2%, then decreasing 1% a year until they are 7-1/2%/10-1/2%, then level.

NY5:   Interest rates decreasing 1/2% a year until they reach 2-1/2%/5-1/2%, then level.

NY6:   Interest rates decreasing 1% a year until they reach 2-1/2%/5-1/2%, then increasing 1% a year until they are 7-1/2%/10-1/2%, then level.

NYD2:   Interest rates increasing 1% a year until they reach 17-1/2%/20-1/2%, then level.

NYD3:   Interest rates increasing 2% a year until they reach 17-1/2%/20-1/2%, then decreasing 2% a year until they reach 7-1/2%/10-1/2%, then level.

PLUSn: Immediate "pop up" of interest rates by n%, then level. Note that PLUS3 is the 4th scenario of N.Y. Regulation 126.

MINUSn: Immediate "pop down" of interest rates by n%, then level. Note that MINUS3 is the 7th scenario of N.Y. Regulation 126.

Investment Mix - 1 year: 10.00%

Investment Mix - 2 years: 10.00%

Investment Mix - 3 years: 10.00%

Investment Mix - 5 years: 15.00%

Investment Mix - 10 years: 20.00%

Investment Mix - 15 years: 15.00%

Investment Mix - 20 years: 10.00%

Investment Mix - 30 years: 10.00%

Product I - 4% Whole Life
Surplus Required - Portfolio Rate

| LAPSE | .2 | .4 | .8 | 1.6 | 0 | 0 | 0 | 0 | .4 | 1.6 | .4 | 1.6 |
LOAN	0	0	0	0	.5	1.0	2.0	4.0	1.0	1.0	2.0	2.0
NY1	0	0	0	0	0	0	0	0	0	0	0	0
NY2	0	0	0	0	0	0	0	0	0	0	0	0
NY3	0	0	0	0	0	0	0	0	0	0	0	0
NY5	0	0	0	0	0	0	0	0	0	0	0	0
NY6	0	0	0	0*(2003)	0	0	0	0	0	0*(2002)	0	0*(2001)
NYD2	0	0*(2000)	0*(1996)	0*(1994)	0	0	0	0	0*(1998)	0*(1994)	0*(1994)	0*(1994)
NYD3	0	0	0*(1992)	0*(1991)	0	0	0	0	0*(1994)	0*(1991)	0*(1993)	0*(1991)
PLUS2	0	0	0	0	0	0	0	0	0	0	0	0
PLUS3	0	0	0	0	0	0	0	0	0	0	0	0
PLUS4	0	0	0	0*(1991)	0	0	0	0	0	0*(1990)	0	0*(1990)
PLUS5	0	0	0*(1992)	0*(1989)	0	0	0	0	0*(1998)	0*(1989)	0*(1993)	0*(1989)
PLUS6	0	0*(1995)	0*(1990)	0*(1988)	0	0	0	0	0*(1992)	0*(1988)	0*(1993)	0*(1988)
PLUS8	0*(1997)	0*(1990)	0*(1989)	0*(1987)	0	0	0	0	0*(1990)	0*(1987)	0*(1990)	0*(1987)
MINUS3	0	0	0	0	0	0	0	0	0	0	0	0
MINUS4	0	0	0	0	0	0	0	0	0	0	0	0
MINUS5	0	0	0	0	0	0	0	0	0	0	0	0

*Note: Numbers in parentheses indicate year in which all business lapses.

Product I – 4% Whole Life
Surplus Required – New Money Rate

| LAPSE | .2 | .4 | .8 | 1.6 | 0 | 0 | 0 | 0 | .4 | 1.6 | .4 | 1.6 |
LOAN	0	0	0	0	.5	1.0	2.0	4.0	1.0	1.0	2.0	2.0
NY1	0	0	0	0	0	0	0	0	0	0	0	0
NY2	0	0	0	0	0	0	0	0	0	0	0	0
NY3	1	1	1	1	1	1	1	1	1	1	1	1
NY5	0	0	0	0	0	0	0	0	0	0	0	0
NY6	0	0	0	0	0	0	0	0	0	0	0	0
NYD2	8	8	8	8	8	8	8	8	8	8	8	8
NYD3	7	7	7	7	7	7	7	7	7	7	7	7
PLUS2	1	1	1	1	1	1	1	1	1	1	1	1
PLUS3	2	2	2	2	2	2	2	2	2	2	2	2
PLUS4	4	4	4	4	4	4	4	4	4	4	4	4
PLUS5	6	6	7	7	6	6	6	6	6	8	6	8
PLUS6	9	9	10	12	9	9	9	9	9	12	9	12
PLUS8	14	14	16	0*(1987)	13	13	13	13	14	0*(1987)	14	0*(1987)
MINUS3	0	0	0	0	0	0	0	0	0	0	0	0
MINUS4	0	0	0	0	0	0	0	0	0	0	0	0
MINUS5	0	0	0	0	0	0	0	0	0	0	0	0

Note: Numbers in parentheses indicate year in which all business lapses.

Product II – 7-1/2% Whole Life
Surplus Required – Portfolio Rate

| LAPSE | .2 | .4 | 1.6 | 0 | 1.6 |
LOAN	0	0	0	4.0	2.0
NY1	0	0	0	0	0
NY2	0	0	0	0	0*(1999)
NY3	0	0	0	0	0
NY5	0	0	0	0	0
NY6	0	0	0	0	0*(2001)
NYD2	0	0*(1998)	0*(1994)	0	0*(1994)
NYD3	0	0*(1996)	0*(1991)	0	0*(1991)
PLUS2	0	0	0	0	0
PLUS3	0	0	0	0	0*(1991)
PLUS4	0	0	0*(1991)	0	0*(1991)
PLUS5	0	0	0*(1989)	0	0*(1989)
PLUS6	0	0	0*(1988)	0	0*(1989)
PLUS8	0	0*(1991)	0*(1987)	0	0*(1987)
MINUS3	0	0	0	0	0
MINUS4	0	0	0	0	0
MINUS5	0	0	0	0	0

*Note: Numbers in parentheses indicate year in which all business lapses.

Product II – 7-1/2% Whole Life
Surplus Required – New Money Rate

	.2	.4	1.6	0	1.6
LAPSE					
LOAN	0	0	0	4.0	2.0
NY1	0	0	0	0	0
NY2	0	0	0	0	0
NY3	3	3	3	1	2
NY5	0	0	0	0	0
NY6	0	0	0	0	0
NYD2	12	11	11	9	9
NYD3	9	10	8	9	7
PLUS2	2	1	1	2	1
PLUS3	3	3	2	3	2
PLUS4	5	5	2	5	3
PLUS5	8	7	5	8	5
PLUS6	8	9	7	10	7
PLUS8	14	13	0*(1987)	14	0*(1987)
MINUS3	0	0	0	0	0
MINUS4	0	0	0	0	0
MINUS5	0	0	0	0	0

*Note: Numbers in parentheses indicate year in which all business lapses.

Product III – 6%/4% Whole Life
Surplus Required - Portfolio Rate

LAPSE LOAN	.4 0	0 4.0	1.6 2.0
NY1	0	0	0
NY2	0	0	0
NY3	0	0	0
NY5	0	0	0
NY6	0	0	0*(2001)
NYD2	0	0	0*(1994)
NYD3	0	0	0*(1991)
PLUS2	0	0	0
PLUS3	0	0	0*(1997)
PLUS4	0	0	0*(1991)
PLUS5	0	0	0*(1989)
PLUS6	0	0	0*(1989)
PLUS8	0*(1987)	0	0*(1987)
MINUS3	0	0	0
MINUS4	0	0	0
MINUS5	0	0	0

*Note: Numbers in parentheses indicate year in which all business lapses.

Product III - 6%/4% Whole Life
Surplus Required - New Money Rate

| LAPSE | .4 | 0 | 1.6 |
LOAN	0	4.0	2.0
NY1	0	0	0
NY2	0	0	0
NY3	2	1	1
NY5	0	0	0
NY6	0	0	0
NYD2	10	7	8
NYD3	9	6	7
PLUS2	1	1	0
PLUS3	3	3	2
PLUS4	5	5	5
PLUS5	7	8	9
PLUS6	10	10	13
PLUS8	0*(1987)	13	0*(1987)
MINUS3	0	0	0
MINUS4	0	0	0
MINUS5	0	0	0

*Note: Numbers in parentheses indicate year in which all business lapses.

Product IV - 4% Minimum Cash Value Whole Life
Surplus Required - Portfolio Rate

| LAPSE | .4 | 0 | 1.6 |
LOAN	0	4.0	2.0
NY1	0	0	0
NY2	0	0	0*(2000)
NY3	0	0	0
NY5	0	0	0
NY6	0	0	0*(2001)
NYD2	0*(2000)	0	0*(1994)
NYD3	0	0	0*(1991)
PLUS2	0	0	0
PLUS3	0	0	0
PLUS4	0	0	0*(1990)
PLUS5	0	0	0*(1989)
PLUS6	0*(1997)	0	0*(1988)
PLUS8	0*(1991)	0	0*(1987)
MINUS3	0	0	0
MINUS4	0	0	0
MINUS5	0	0	0

*Note: Numbers in parentheses indicate year in which all business lapses.

Product IV – Minimum Cash Value Whole Life
Surplus Required – New Money Rate

LAPSE	.4	0	1.6
LOAN	0	4.0	2.0
NY1	0	0	0
NY2	0	0	0
NY3	2	1	2
NY5	0	0	0
NY6	11	8	9
NYD2	1	1	1
NYD3	3	3	2
PLUS2	7	7	6
PLUS3	0	0	0
PLUS4	9	10	9
PLUS5	16	13	0*(198,,
PLUS6	5	5	4
PLUS8	0	0	0
MINUS3	9	7	7
MINUS4	0	0	0
MINUS5	0	0	0

*Note: Numbers in parentheses indicate year in which all business lapses.

Product V - 10 Pay Life
Surplus Required - Portfolio Rate

| LAPSE | .4 | 0 | 1.6 |
LOAN	0	4.0	2.0
NY1	0	0	0
NY2	0	0	0*(1997)
NY3	0	0	0
NY5	0	0	0
NY6	0	0	0*(2001)
NYD2	0*(1999)	0	0*(1994)
NYD3	0	0	0*(1991)
PLUS2	0	0	0
PLUS3	0	0	0*(1993)
PLUS4	0	0	0*(1990)
PLUS5	0	0	0*(1989)
PLUS6	0*(1985)	0	0*(1988)
PLUS8	0*(1987)	0	0*(1987)
MINUS3	0	0	0
MINUS4	0	0	0
MINUS5	0	0	0

*Note: Numbers in parentheses indicate year in which all business lapses.

Product V - 10 Pay Life

Surplus Required - New Money Rate

LAPSE LOAN	.4 0	0 4.0	1.6 2.0
NY1	0	0	0
NY2	0	0	0
NY3	1	0	0
NY5	0	0	0
NY6	0	0	0
NYD2	8	5	6
NYD3	8	6	6
PLUS2	1	1	1
PLUS3	2	2	2
PLUS4	4	3	4
PLUS5	5	5	7
PLUS6	9	8	12
PLUS8	0*(1987)	12	0*(1987)
MINUS3	0	0	0
MINUS4	0	0	0
MINUS5	0	0	0

*Note: Numbers in parentheses indicate year in which all business lapses.

SLIDE 7P

Product VI - Single Premium Life
Surplus Required - Portfolio Rate

LAPSE LOAN	.4 0	0 4.0	1.6 2.0
NY1	0	0	0
NY2	0	0	0*(1997)
NY3	0	0	0*(1993)
NY5	0	0	1
NY6	0	0	0*(2000)
NYD2	0	0	0*(1993)
NYD3	0	0	0*(1991)
PLUS2	0	0	0*(1998)
PLUS3	0	0	0*(1991)
PLUS4	0	0	0*(1990)
PLUS5	0	0	0*(1989)
PLUS6	0	0	0*(1988)
PLUS8	0	0	0*(1987)
MINUS3	0	0	1
MINUS4	0	0	1
MINUS5	0	0	1

*Note: Numbers in parentheses indicate year in which all business lapses.

Product VI – Single Premium Life
Surplus Required – New Money Rate

LAPSE LOAN	.4 0	0 4.0	1.6 2.0
NY1	0	0	0
NY2	4	3	3
NY3	4	4	4
NY5	0	0	0
NY6	0	0	0
NYD2	13	11	12
NYD3	11	9	11
PLUS2	2	3	3
PLUS3	3	6	10
PLUS4	5	8	9
PLUS5	7	10	12
PLUS6	9	14	16
PLUS8	0*(1987)	18	0*(1987)
MINUS3	0	0	0
MINUS4	0	0	0
MINUS5	0	0	0

*Note: Numbers in parentheses indicate year in which all business lapses.

SLIDE 8P

Dividend Interest Rate
Portfolio Rate

Scenario	Year 1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	2001	2006	2011	2016
NY1	9.5	9.5	9.6	9.6	9.6	9.7	9.7	9.8	9.8	9.8	9.8	9.8	9.9	9.9
NY2	9.5	9.6	9.7	9.8	10.0	10.2	10.3	10.6	10.7	10.9	12.2	13.9	14.5	14.7
NY3	9.5	9.6	9.8	10.0	10.2	10.3	10.3	10.5	10.6	10.7	9.9	9.8	9.9	9.9
NY5	9.5	9.5	9.4	9.4	9.2	9.2	7.6	7.3	7.1	6.8	4.9	4.9	4.9	5.0
NY6	9.5	9.4	9.3	9.0	8.6	8.3	5.5	5.6	5.7	6.0	5.9	6.4	7.5	8.6
NYD2	9.5	9.6	9.8	10.0	10.2	10.3	10.3	10.0	9.0	6.5	N/M	N/M	N/M	N/M
NYD3	9.5	9.6	9.9	9.8	8.8	4.2	N/M	N/M	N/M	N/M	N/M	N/M	N/M	N/M
PLUS2	9.6	9.7	9.8	10.0	10.1	10.3	10.4	10.6	10.7	10.8	11.6	12.0	11.9	11.9
PLUS3	9.5	9.7	9.8	10.0	10.1	10.3	10.5	10.7	10.8	11.0	11.9	12.7	12.8	12.9
PLUS4	9.4	9.5	9.6	9.7	9.8	9.9	10.0	10.1	10.3	10.5	12.0	13.5	13.8	13.8
PLUS5	9.3	9.0	8.7	8.3	7.7	7.0	5.8	4.1	1.4	-2.9	N/M	N/M	N/M	N/M
PLUS6	9.0	8.1	6.9	4.6	-.5	-17.6	N/M	N/M	N/M	N/M	N/M	N/M	N/M	N/M
PLUS8	8.2	4.4	-6.2	N/M	N/M	N/M	N/M	N/M	N/M	N/M	N/M	N/M	N/M	N/M
MINUS3	9.4	8.6	8.4	8.3	8.3	8.3	6.8	6.8	6.9	6.9	6.8	6.9	6.9	7.0
MINUS4	9.3	8.2	7.9	7.8	7.7	7.7	5.8	5.8	5.8	5.9	5.8	5.9	5.9	6.0
MINUS5	9.2	7.7	7.4	7.2	7.1	7.0	4.7	4.8	4.8	4.9	4.8	4.9	4.9	5.0

SLIDE 8NM

Dividend Interest Rate
New Money Rate

Scenario	Year 1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	2001	2006	2011	2016
NY1	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
NY2	9.3	9.8	10.3	10.8	11.3	11.8	12.3	12.8	13.3	13.8	13.8	13.8	13.8	13.8
NY3	9.8	10.8	11.8	12.8	13.8	11.8	10.8	9.8	8.8	8.8	8.8	8.8	8.8	8.8
NY5	8.3	7.8	7.3	6.8	6.3	5.8	5.3	4.8	4.3	3.8	3.8	3.8	3.8	3.8
NYD2	7.8	6.8	5.8	4.8	3.8	4.8	5.8	6.8	7.8	8.8	8.8	8.8	8.8	8.8
NYD3	9.8	10.8	11.8	12.8	13.8	14.8	15.8	16.8	17.8	18.8	18.8	18.8	18.8	18.8
PLUS2	10.8	12.8	14.8	16.8	18.8	16.8	14.8	12.8	10.8	8.8	8.8	8.8	8.8	8.8
PLUS3	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8
PLUS4	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
PLUS5	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8
PLUS6	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8
PLUS8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8
MINUS3	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
MINUS4	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
MINUS5	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8

LONG TERM INTEREST RATE

DIVIDEND INTEREST RATE
Dividend Rate Based on Earned Rate

BENEFITS

Dividend Rate Based on Earned Rate
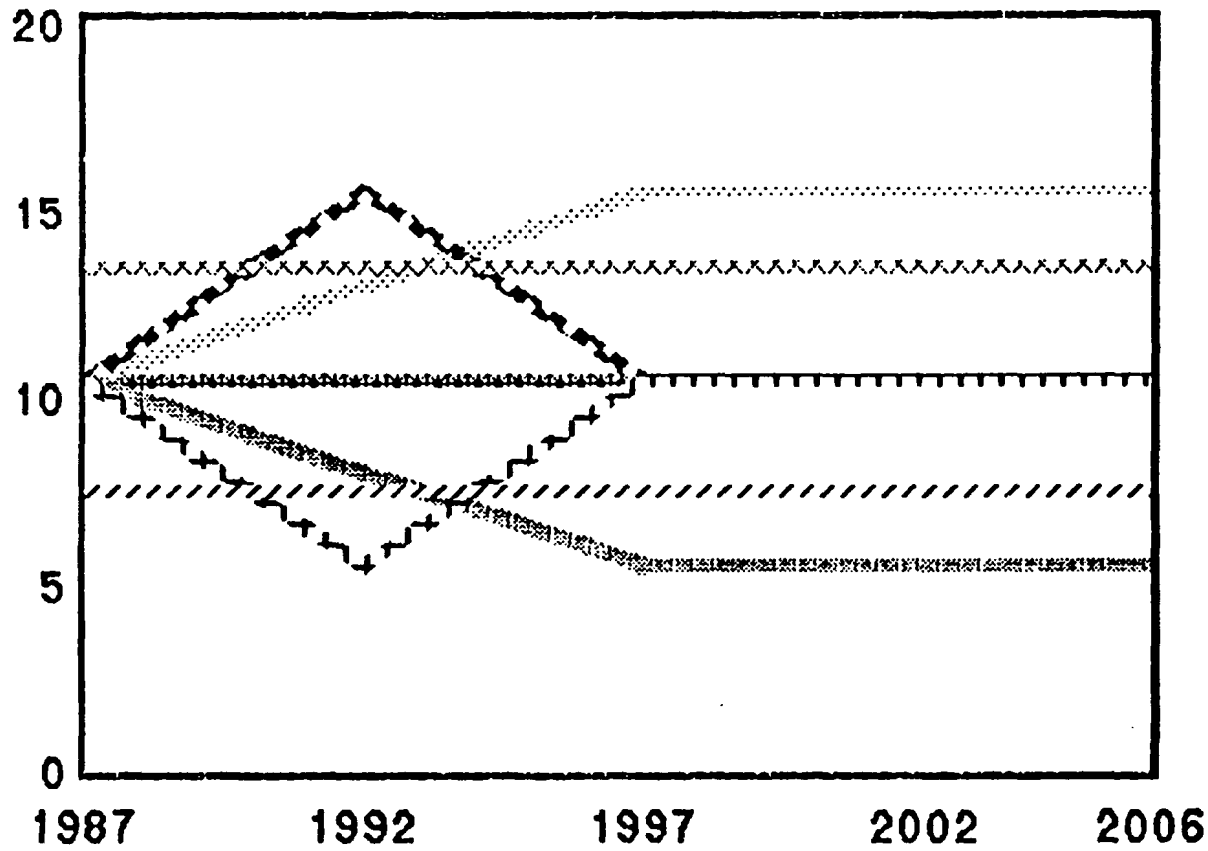
POLICY LOANS

Dividend Rate Based on Earned Rate
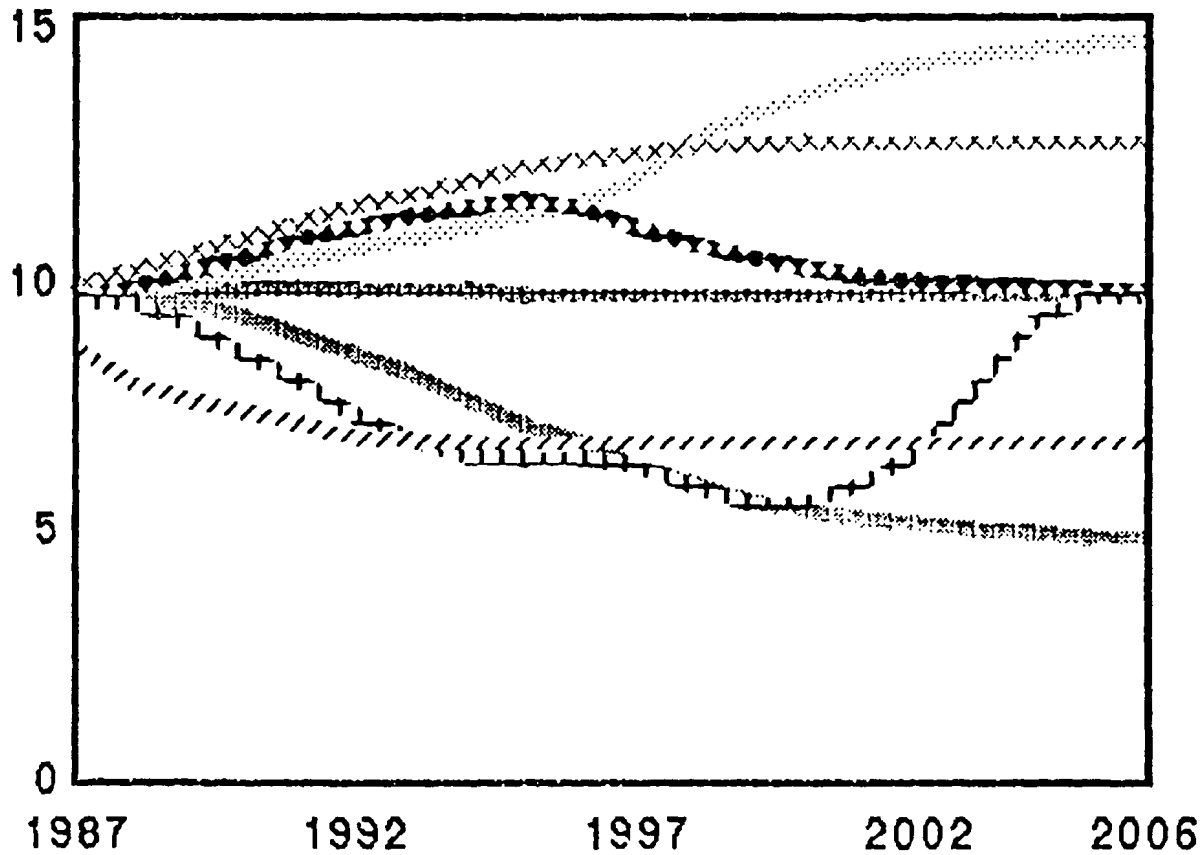
$ Thousands
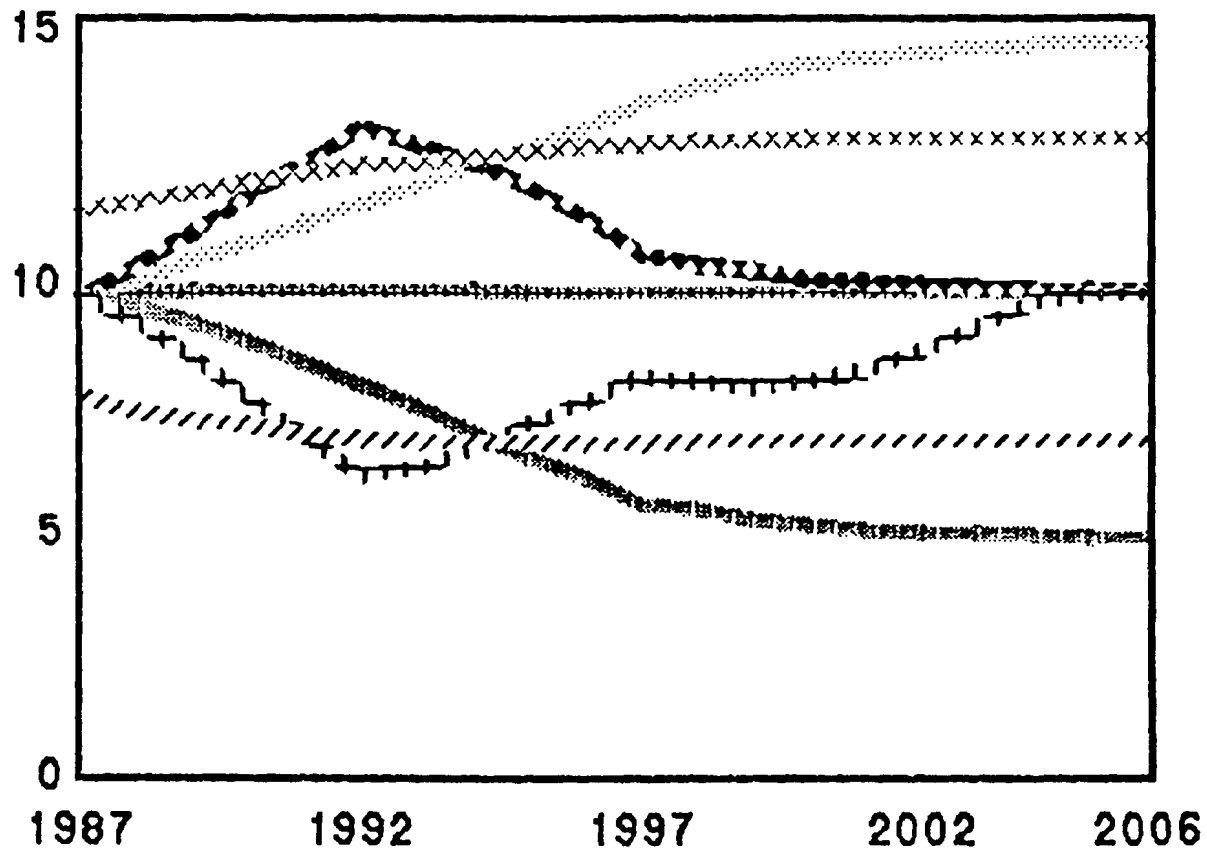
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SURPLUS
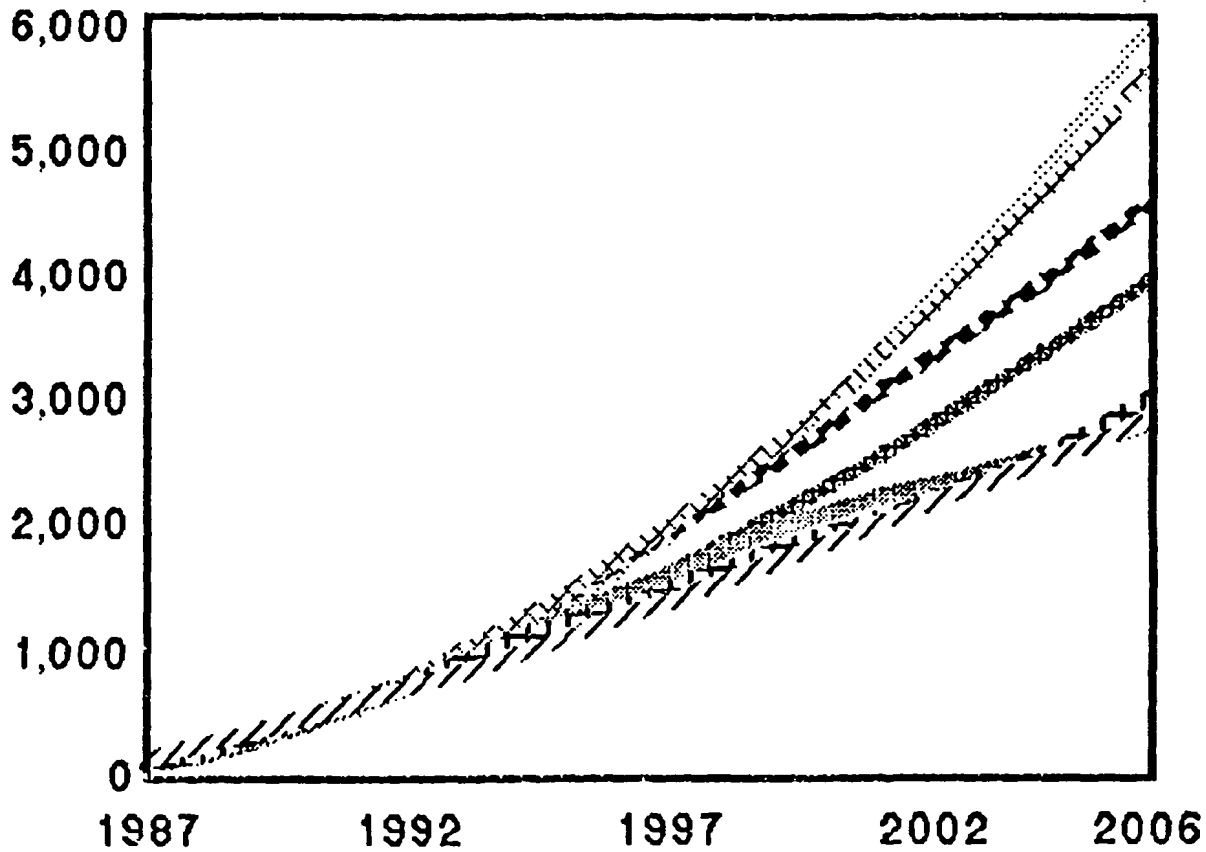
Dividend Rate Based on Earned Rate

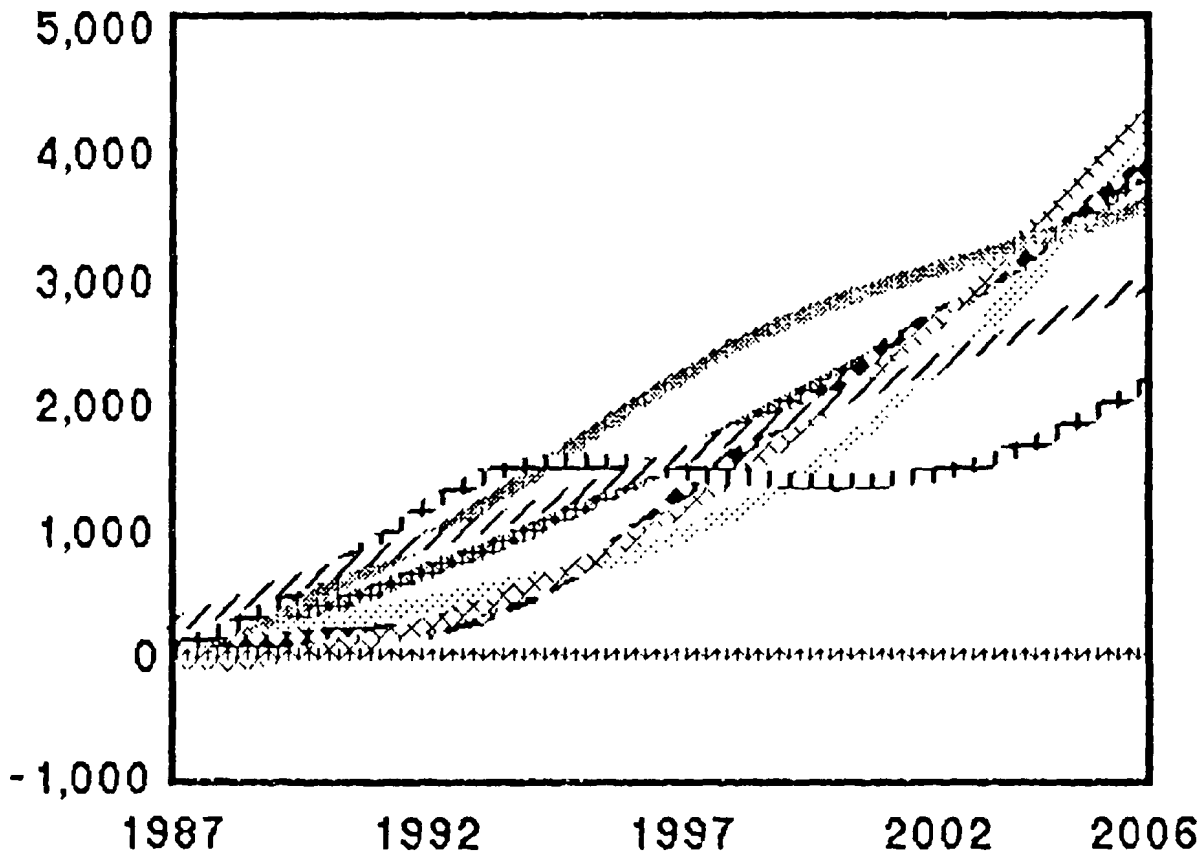DIVIDEND INTEREST RATE

Dividend Rate Based on 50% Blended Rate

BENEFITS

Dividend Rate Based on 50% Blended Rate

SURPLUS

Dividend Rate Based on 50% Blended Rate

DIVIDEND INTEREST RATE 6% PRODUCT
Dividend Rate Based on Earned Rate
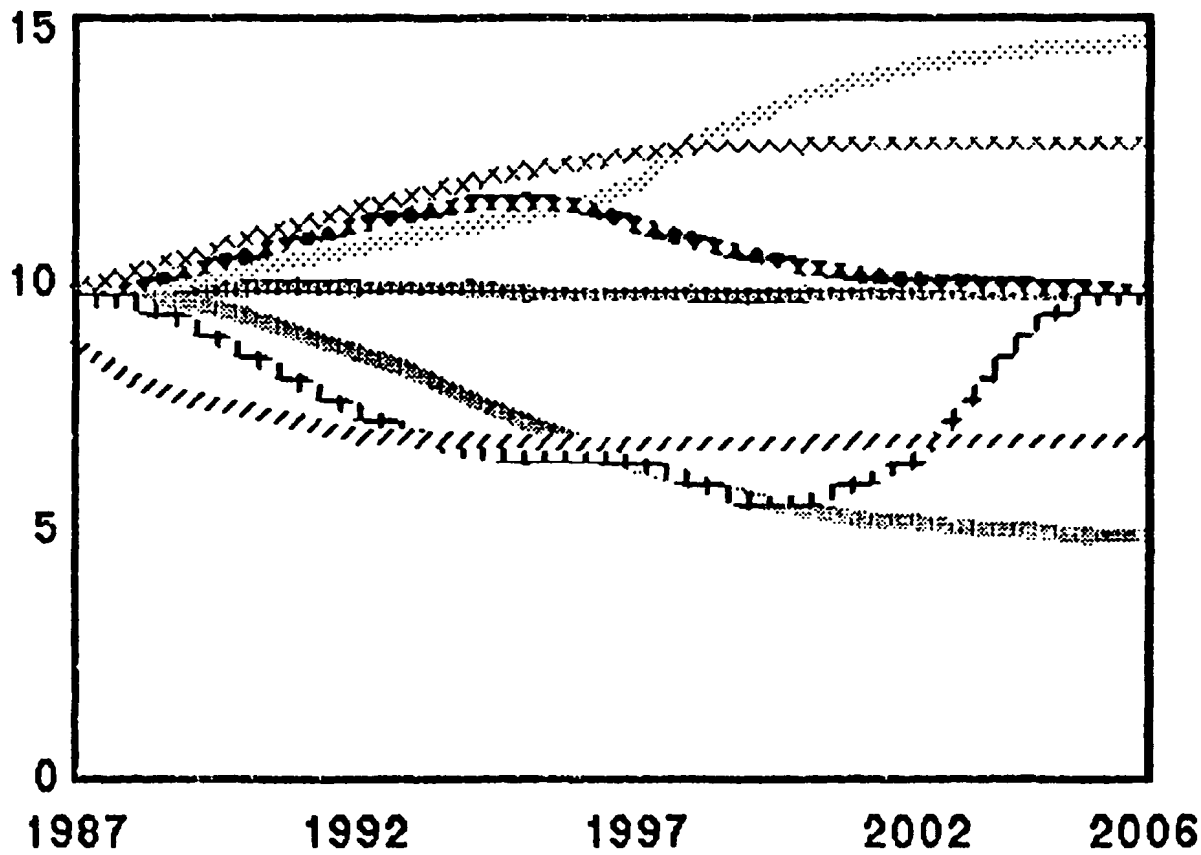
BENEFITS - 6% PRODUCT

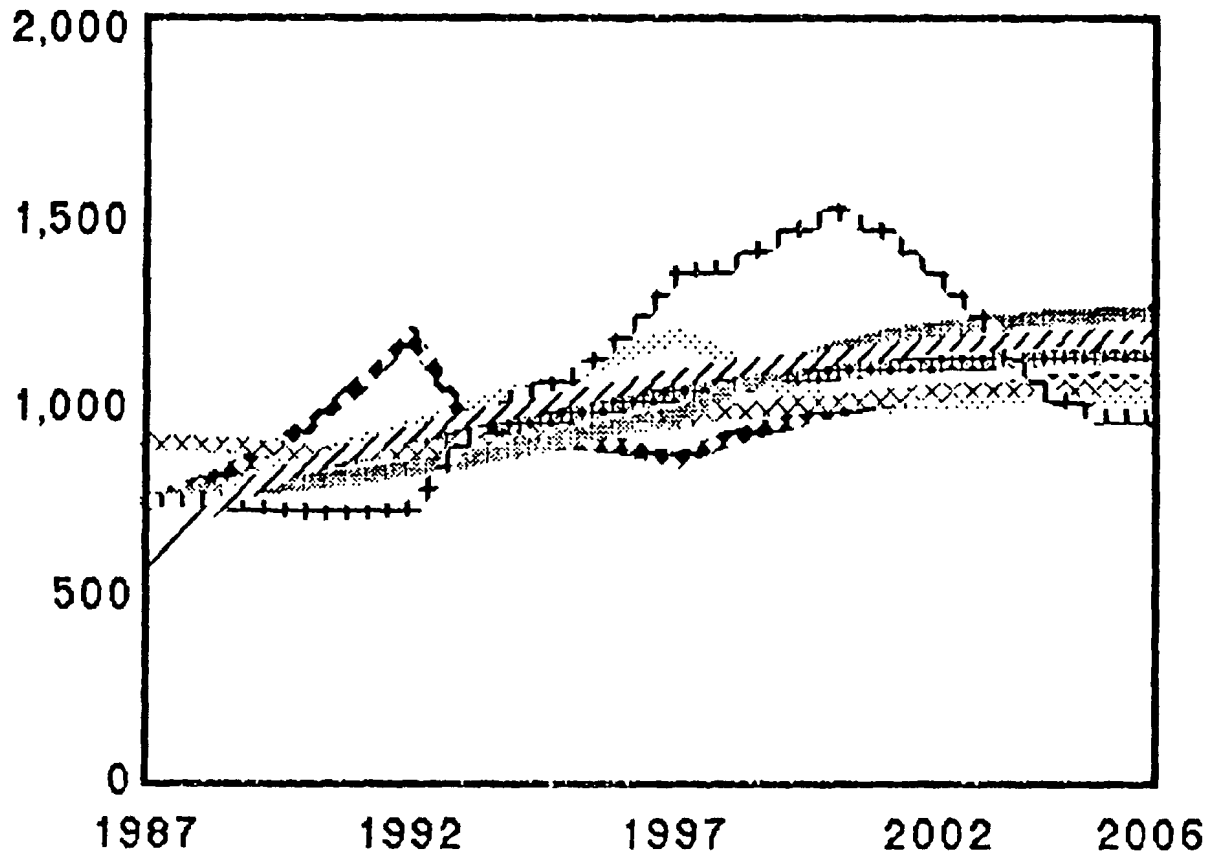Dividend Rate Based on Earned Rate