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ECONOMIC ASSUMPTIONS FOR PENSION PLANS

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1. Investment return
2. Salary scales
 - a. Inflation/productivity/merit increases
 - b. The investment return barrier
3. The "Spread" - Investment return minus salary scale
 - a. Is it the same at all levels of inflation?
 - b. Should it be measured relative to total salary scale or inflation element only?
4. Post-retirement increases
 - a. Automatic
 - b. Ad hoc
 - c. Conditional
5. Increases in Social Security benefits
6. Effects of inflation and economy on other assumptions
 - a. Disability
 - b. Retirement rates
 - c. Turnover
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7. Assumptions varying by calendar year
 - a. How used
 - b. Effect on gains and losses
 - c. Effect on plan sponsor's acceptance of results
 - d. Micro-effects of current unstable economic conditions

MR. ARTHUR W. ANDERSON: We are here to talk about economic assumptions for pension plans. You must be wondering why we seem to have this topic on the agenda for every meeting. I think one of the reasons is that we do not have, in either the U.S. or Canada, a stable currency in the old-fashioned sense of the term, so that we are always dealing in a unit of measurement made of rubber. This means we often find ourselves having to justify economic assumptions which look funny when compared to reality. We actuaries have a touching faith that some kind of normal condition will eventually reassert itself; that what we have seen for the last fifteen years is not normal; that there is a quiet and placid future of no inflation and 3% interest rates waiting out there somewhere.

MR. JAMES J. MARKS: The actuarial work for the HUD large public plan study, funded through the Urban Institute, was done by Winklevoss & Associates over a two-year period ending this past January. We were asked to determine what shape the large plan public sector was in, and where it was likely to go over the next fifty years.

The universe of large public plans, that is, plans with over 1,000 lives, consisted of over 400 plans, some of which were dropped for various reasons; for example, TIAA/CREF, all the Federal plans, and a few others. We selected the largest 35 and then drew on a random basis 65 of the remaining 350 plans. Table 1 shows the coverage based on active lives, assets, and benefits. As you can see, for other than uniformed workers we picked up about three quarters of the action.

TABLE 1

COVERAGE RATIOS OF FINAL SAMPLE

| UNIVERSE/SUBSETS | PLANS | ACTIVES | ASSETS | BENEFITS |
|------------------|-------|---------|--------|----------|
| ALL GROUPS: | 29% | 73% | 74% | 69% |
| REGION:* | | | | |
| 1 | 31 | 75 | 79 | 70 |
| 2 | 38 | 74 | 71 | 69 |
| 3 | 23 | 70 | 71 | 68 |
| 4 | 28 | 73 | 72 | 69 |
| EMPLOYEE TYPE: | | | | |
| PERS | 30 | 75 | 77 | 71 |
| TEACHERS | 38 | 72 | 72 | 72 |
| UNIFORMED | 17 | 37 | 54 | 42 |

*REGIONS ARE: 1 = NORTHEAST, 2 = NORTH CENTRAL, 3 = SOUTH,

4 = WEST. STATES COMPRISING THESE REGIONS ARE LISTED IN

APPENDIX C.

Table 2 will give you some indication as of approximately 1978 what the plan actuaries were assuming for interest rate and salary scales in their annual valuations. I would have expected at that time to see 6%, 3-1/2% and that is why I put the box around those two numbers. As it turned out in our random sampling, nine plans showed up from one state that had many local county-type plans. All these were valued on the same set of assumptions so this is slightly biased here. If you take out that bias the mean and median comes almost exactly to 6%, 3-1/2%.

TABLE 2

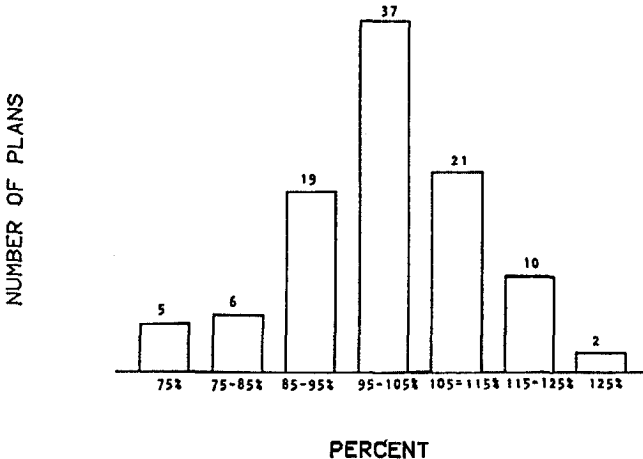
RELATIONSHIP OF INTEREST ASSUMPTIONS
TO SALARY INFLATION ASSUMPTIONS
FOR BASIC SAMPLE PLANS
(NUMBER OF PLANS)

| INTEREST RATE ASSUMPTIONS (%) | SALARY INFLATION ASSUMPTION (%) | | | | | | | | | | | | | TOTAL |
|-------------------------------|---------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| | >.0 | .5 | 1.0 | 1.5 | 2.0 | 2.5 | 3.0 | 3.5 | 4.0 | 4.5 | 5.0 | 5.5 | > 6 | |
| | ≤.5 | 1.0 | 1.5 | 2.0 | 2.5 | 3.0 | 3.5 | 4.0 | 4.5 | 5.0 | 5.5 | 6.0 | | |
| ≤ 4.0 | 1 | 1 | 0 | 0 | 1 | | | | | | | | | 3 |
| 4.0-4.5 | 0 | 0 | 1 | 0 | 0 | | | | | | | | | 1 |
| 4.5-5.0 | 1 | 0 | 1 | 1 | 4 | 3 | 1 | 2 | | | | | | 13 |
| 5.0-5.5 | 1 | 0 | 2 | 4 | 4 | 2 | 0 | 3 | | | | | | 16 |
| 5.5-6.0 | 1 | 0 | 1 | 0 | 3 | 4 | 10 | 11 | 2 | 4 | | | | 36 |
| 6.0-6.5 | | | 1 | 0 | 1 | 2 | 2 | 0 | 1 | 3 | 0 | 1 | | 11 |
| 6.5-7.0 | | | | 2 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 8 |
| > 7.0 | | | | | | | | 1 | 10 | 0 | 0 | 0 | 1 | 12 |
| TOTAL | 4 | 1 | 6 | 7 | 13 | 13 | 13 | 17 | 13 | 8 | 1 | 2 | 2 | 100 |

Table 3 gives us a measure of how conservative or optimistic the actuarial assumptions and the level of funding have been for these plans. It shows the ratio of plan actuary's actuarial liability to the "uniform-methodology

TABLE 3

DISTRIBUTION OF RATIO
OF CURRENT METHODOLOGY ASSET TARGET TO
BEST-ESTIMATE LPCM ASSET TARGET



asset target", which is a term that Winklevoss & Associates tends to use and no one else. "Asset target" is nothing more than the actuarial liability under the funding method. "Current methodology" means the plan actuary's assumptions using the entry-age-normal or accrued-benefit cost method, whichever the actuary was using. I say that because a lot of public plans use legislated rates or flat dollar amounts so we have to impute the entry-age-normal asset target here for this illustration. You can see the ratio of current-methodology asset target to uniform-methodology asset target forms almost a perfect normal curve, which was quite a surprise to me as well as many of the people at the Urban Institute.

At this time I would like to try to run through the actual project tasks rather quickly to give you a feel for how we came up with the numbers that I will be showing you later. The first thing we did was perform a 50-year population simulation based on the non-economic assumptions the plan actuary was using and an economic environment of 7% yield on the assets, 6% salary inflation plus an empirical merit scale derived by us from the illustrated population of the plan in the valuation report, 5% CPI and population growth characteristics that were distinct for every city and state, blending into the national growth rate over a 25- to 30-year period. We then performed two financial forecasts. The first was the uniform-methodology forecast using the same assumptions that the population simulation was from. The second we refer to as the current-methodology, or plan actuary's, economic assumptions and the system's costing strategy. Again I use that phrase for the systems that use a flat-dollar or flat-percentage and not an entry-age-normal type of approach. Plan improvements and ad hoc COLAs were not assumed in the initial forecast.

When we were done with the initial results, we were grossly unhappy with them. The cash-flow forecast showed that the aggregate-universe plan costs nose-dives over the 50-year period. Funded ratios approach 90% even under the current financing methodology (of which many were quite strange), and ratios of assets to plan continuation liability were well over 100%. Several months later it was decided that we would reforecast the current-methodology forecast only and assume that all plans would provide ad hoc COLAs up to a total of 5%; that is to say, the automatic COLA plus an ad hoc COLA would equal the CPI rate or 5%. No other benefit improvements were assumed. The next set of tables I would like to show are the final current-methodology forecasts that were run using the ad hoc COLAs.

On Table 4, when it says "aggregate universe", this means we took the results for the 100 individual plans and blew them up statistically so that the 9 million in the second column actually represents the more than 350 plans with over 1,000 lives that remained in our potential sample. This is the population simulation. There really were not too many unexpected results here.

[Table 4 on next page]

TABLE 4

STATISTICAL ABC.

AGGREGATE UNIVERSE
FORECAST OF PLAN MEMBERSHIP

| YEAR | ACTIVE PLAN MEMBERS | | | | PLAN ANNUITANTS | | | |
|------|---------------------|-------------|-----------------|-----------------|-----------------|----------------|---------------------|---------------|
| | NUMBER | AVERAGE AGE | AVERAGE SERVICE | AVERAGE PAYROLL | NUMBER | PCT OF ACTIVES | BENEFITS (MILLIONS) | PER ANNUITANT |
| 1979 | 9,073,865 | 40.32 | 8.47 | 13,084 | 2,324,056 | 25.61 | 12,620.10 | 5,430 |
| 1989 | 9,622,104 | 41.05 | 9.66 | 22,900 | 3,123,856 | 32.47 | 33,429.87 | 10.701 |
| 1999 | 10,231,701 | 41.24 | 10.06 | 40,219 | 3,654,071 | 35.71 | 75,193.71 | 20,578 |
| 2009 | 10,755,163 | 41.27 | 10.06 | 71,000 | 4,041,669 | 37.58 | 156,679.54 | 38,766 |
| 2019 | 11,182,490 | 41.19 | 9.91 | 126,705 | 4,388,156 | 39.24 | 294,001.14 | 66,999 |

FORECAST INCLUDES AD HOC COLAS

MEMBERSHIP MATURED AS EXPECTED

Table 5 is the current-methodology or system-costing forecast. System financing means we are assuming 100% of either the legislated rate or the actuary's calculated rates is put in each year. That is to say, if the

TABLE 5

AGGREGATE UNIVERSE

FINANCIAL FORECAST OF PENSION PLAN
UNDER CURRENT METHODOLOGY
(DOLLARS IN MILLIONS)

| YEAR | ACTIVE MEMBERS | VALUATION PAYROLL | ASSETS AT B.O.Y. | EMPLOYER CONTRIBUTIONS | | | | EMPLOYEE CONTRIBUTIONS | | BENEFIT PAYMENTS | |
|------|----------------|-------------------|------------------|------------------------|----------|---------|----------|------------------------|----------|------------------|----------|
| | | | | NC | | TC | | \$ | % OF PAY | \$ | % OF PAY |
| | | | | \$ | % OF PAY | \$ | % OF PAY | | | | |
| 1979 | 9,073,865 | 118,724 | 162,505 | 12,768 | 10.8 | 15,370 | 12.9 | 5,377 | 4.5 | 12,620 | 10.6 |
| 1989 | 9,622,104 | 220,345 | 434,724 | 24,676 | 11.2 | 29,179 | 13.2 | 10,079 | 4.6 | 33,430 | 15.2 |
| 1999 | 10,231,701 | 411,506 | 907,843 | 48,029 | 11.7 | 55,990 | 13.6 | 18,800 | 4.6 | 75,194 | 18.3 |
| 2009 | 10,755,163 | 763,617 | 1,709,581 | 88,919 | 11.6 | 103,247 | 13.5 | 34,808 | 4.6 | 156,680 | 20.5 |
| 2019 | 11,182,490 | 1,416,881 | 3,014,382 | 171,990 | 12.1 | 195,305 | 13.8 | 64,721 | 4.6 | 294,001 | 20.7 |

FORECAST INCLUDES AD HOC COLA

STILL NO CASH FLOW PROBLEMS

actuary says he put in a million dollars, we are assuming that he actually put it in. That is a subject I will talk about in a few minutes. Please note the employer normal costs and total costs columns. With the ad hoc COLAs you can see that the employer contributions go from 13% to 14% over the 45 years illustrated. This is in contrast to the initial forecast where employer costs dropped from 13% down to 8.6% over the same period.

Table 6 shows that even with ad hoc COLAs the funded percentage under current methodology climbs from 53% up to 64% and then levels off. This was a surprise to most of us, as it was expected that we would see funded ratios start at a much lower level and weaken thereafter. This only happened for a dozen plans or so out of the 100, and most of those actually had no assets by the end of the forecast. But the vast majority of the plans had an increase in funded percentages throughout the forecast even with ad hoc COLAs. To end this section of the talk, I would just like to make three comments about this study.

TABLE 6
AGGREGATE UNIVERSE
FORECAST OF ASSET ACCUMULATION
UNDER CURRENT METHODOLOGY
(DOLLARS IN MILLIONS)

| YEAR | PLAN ASSETS | ACTUARIAL LIABILITY | |
|------|----------------|---------------------|----------|
| | | \$ | FUNDED % |
| 1979 | 162,505 | 308,233 | 53 |
| 1989 | 434,724 | 703,525 | 62 |
| 1999 | 907,843 | 1,425,886 | 64 |
| 2009 | 1,709,581 | 2,703,009 | 63 |
| 2019 | 3,014,382 | 4,888,014 | 62 |

FORECAST INCLUDES AD HOC COLAS

N.B.: CURRENT METH. ASSUMES ACTUAL FDG. = CALC. COSTS?!

The large plan public sector is not in as much trouble as a whole as is commonly believed, at least given the scenario with which we worked. However, we did not assume future benefit improvements, which, from perusing two or three years' worth of actuarial reports were taken into account by the plan actuary in about one-third of the cases. I had to assume that the system put in all the money the actuary or the formula claimed was due. Many plan actuaries I spoke with said that even though this is the current methodology they have to show in the actuarial report, the systems just do not put it in.

I would like to discuss some of the things that affect cost-sensitivity analysis. In Table 7 I have tried to highlight a few plan features that seem to have a great deal of impact on the pension actuary's rules of thumb. On the bottom I have just quickly jotted down a few rules I tend to use or hear of others using. Some of the remaining tables will show how these rules of thumb can really fall apart when you have plan features such as the ones mentioned above.

TABLE 7

SENSITIVITY OF PLAN COST TO ECONOMIC ASSUMPTIONS

PLAN CHARACTERISTICS IMPACTING COST SENSITIVITY:

- 0 RELATIVE IMPORTANCE OF EMPLOYEE CONTRIBUTIONS
- 0 COST-OF-LIVING INDEXING PROVISION
- 0 OFFSETS TO GUARANTEED BENEFITS:
 - . SOCIAL SECURITY OFFSET
 - . PROFIT SHARING OFFSET
- 0 FUNDED RATIO
- 0 RELATIVE SIZE (AND COST) OF THE ANNUITANT GROUP

WATCH OUT FOR EFFECT ON THESE
"RULES OF THUMB":

- 1) 2-1 salary infl. vs interest rate
- 2) $\Delta 1\% i \Rightarrow \Delta 20\% \text{ cost}$
- 3) $\Delta 1\% A \Rightarrow \Delta 10\% \text{ cost}$

The next three tables come from the final report that was published with the HUD study. They are sensitivity analyses based on a representative general member plan as designed by Winklevoss & Associates from average characteristics seen in the 100-plan sample. Table 8 illustrates what happens to total costs based on different valuation assumptions given the same experience. The 14.3% is the baseline cost; that is, using our 6% assumption. The alternative salary rates produce wide swings in initial year costs, but after 30 years the cost streams are fairly close. Note the changes in initial year costs exceed that predicted by our second rule of thumb; this is caused by the leveraging of the employee contributions. Though it is not shown as calculated here, moving from 6% to 9% you would assume a 30% change and actually it is a 45% change.

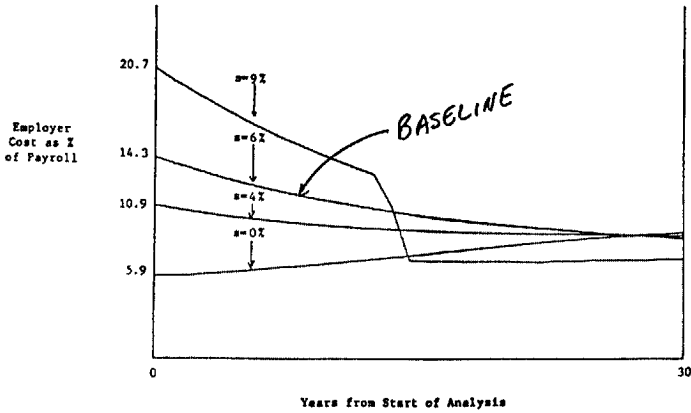
TABLE 8

REPRESENTATIVE GENERAL MEMBER PLAN

ALTERNATIVE COST PATHS WITH DIFFERENT SALARY ASSUMPTIONS*

Valuation Assumptions: $i = 7\%$; $s =$ see chart

Experience Assumptions: $i = 7\%$; $s = 6\%$



* Entry Age Normal with 30 year funding of gains and losses

In Table 9 the experience assumptions are the same for all three cost curves. This time the valuation interest assumption is varied. Note again the changes in initial year costs exceed those predicted by our second rule of thumb

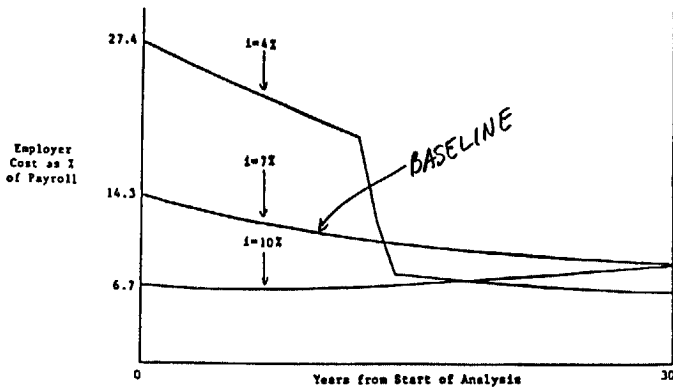
TABLE 9

REPRESENTATIVE GENERAL MEMBER PLAN

ALTERNATIVE COST PATHS WITH DIFFERENT INTEREST RATES*

Valuation Assumptions: $s = 6\%$; $i =$ see chart

Experience Assumptions: $s = 6\%$; $i = 7\%$

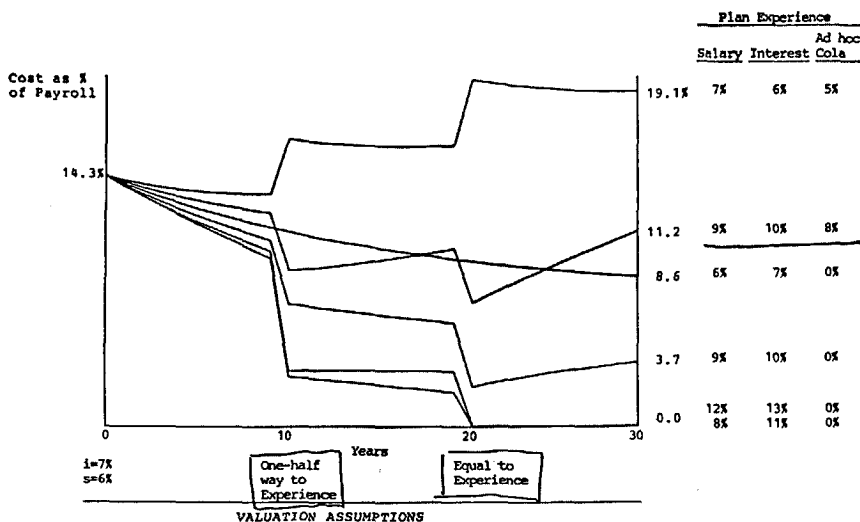


* Entry Age Normal with 30 year funding of gains and losses

Table 10 shows six cost curves based on different experience rates this time but using the same initial valuation assumptions. After ten years, the actuary moves the valuation assumptions halfway to the emerging experience while after twenty years the valuation assumptions are set equal to the rates experienced over the prior twenty years. This table attempts to show how valuation assumptions can tend to dampen the effects of even dramatic swings in experience, as well as how sensitive costs are to the subsequent changes in valuation assumptions.

TABLE 10
REPRESENTATIVE GENERAL MEMBER PLAN

DYNAMIC SIMULATION OF PENSION COSTS



*E.A.N./30 LPSC and AD-HOCs not advance funded

In the last portion of this talk I would like to use some data from two private plans on which I worked. They are unusual in that they both have profit-sharing-plan offsets as well as Social Security offsets. Both plan sponsors look at the pension plan as a "floor of protection" for the profit-sharing plan. I would like to show using these two plans the potential impact of using what are called "implicit" economic assumptions. The leveraging in pension benefits that can be seen in a plan like this is very severe. In other words, for the majority of entry ages and starting salaries very few participants will come out of the pension plan with the projected benefit. This produces cost sensitivity that is quite unusual.

Table 11 is an example of the major plan summary. I have checked off the principal features. There is an ad hoc COLA being assumed on the pension and the profit-sharing benefits which produces some rather strange results in the forecast. We have a profit-sharing contribution that will manifest

DISCUSSION—CONCURRENT SESSIONS

itself to about 4% of pay. And you can also see that the formula is 1-1/2% per year minus a flat Social Security offset, which is rather unusual, and a 100% offset for the profit-sharing plan.

TABLE 11

SUMMARY OF 1980 PLAN DESIGN

- ✓ 0 RETIREMENT
 - ELIGIBILITY: AGE 65
 - BENEFIT: 1.5% FAS PER YEAR (TO 50%) - 58.74% OF PIA - 100% OF PROFIT SHARING BENEFIT
- 0 EARLY RETIREMENT - UNREDUCED
 - ELIGIBILITY: 30 YEARS SERVICE OR AGE 55 WHEN THE SUM OF AGE PLUS YEARS OF SERVICE EQUALS 85
 - BENEFIT: ACCRUED BENEFIT
- 0 EARLY RETIREMENT - REDUCED
 - ELIGIBILITY: AGE 55 WITH 10 YEARS SERVICE
 - BENEFIT: ACCRUED BENEFIT REDUCED BY FORMULA REDUCTION FACTORS
- 0 VESTING: 10 YEARS SERVICE
- 0 DISABILITY:
 - ELIGIBILITY: AGE 50 WITH 15 YEARS SERVICE
 - BENEFIT: ACCRUED BENEFIT
- 0 DEATH:
 - ELIGIBILITY: ELIGIBLE FOR EARLY RETIREMENT
 - BENEFIT: 50% JOINT AND SURVIVOR ANNUITY
- ✓ 0 PROFIT SHARING UNIT: 2 FOR EACH YEAR OF BENEFIT SERVICE PLUS 1 FOR EACH \$100 IN BASE EARNINGS
- ✓ 0 AD-HOC COLA: ON PENSION + P-S BENEFITS

Table 12 is a plan-participant illustration, entry age 30, \$25,000 starting salary, assumed salary inflation of 5%, no merit scale, 7% interest, and just to give you a feel for the profit-sharing plan, it is approximately 4% of salary. These are actually the plan actuary's assumptions.

TABLE 12

CASE EXAMPLE FOR ILLUSTRATING BENEFIT FORMULA

ENTRY AGE IN 1980: AGE 30
 STARTING SALARY: \$25,000
 SALARY INCREASE: 5% PER YEAR
 INVESTMENT RETURN: 7% PER YEAR
 PROFIT SHARING CONT.: \$4 PER UNIT

~ 4% Salary ✓

In Table 13 you can see, using the actuary's assumptions in this first plan, at about age 58 we have a crossover and thereafter there is a residual pension benefit. As an aside, one of the key features which we found to affect costs in this type of plan is the retirement rates. In both of the plans I will discuss the plan actuary was using a single retirement age of 65. The top curve for the early age is the accrued profit-sharing offset, and the bottom curve is what we would refer to as the guaranteed benefit.

TABLE 13

ILLUSTRATION OF BENEFIT FORMULA
 FOR AGE 30 ENTRANT
PLAN ACTUARY'S ASSUMPTIONS

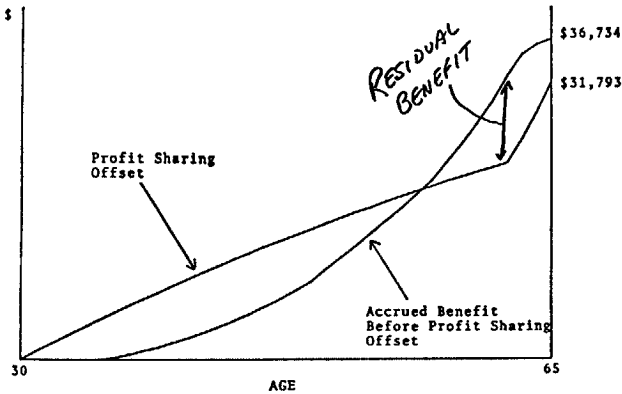


Table 14 is where some eyebrows should start being raised. The second illustrated participant example for this plan is based on what our client considers are his best-estimate assumptions: same age 30, \$25,000, but now we have moved to 12% interest and 8-1/2% salary scale.

TABLE 14

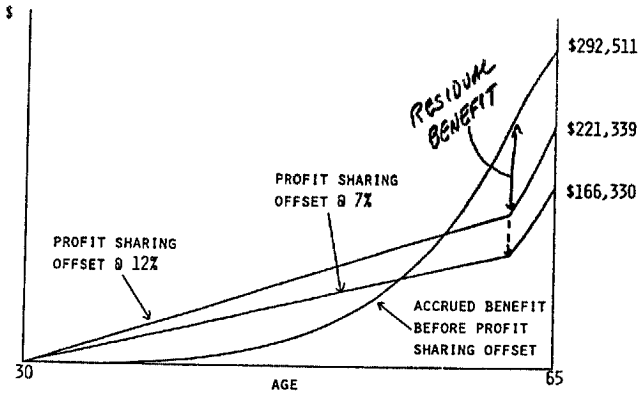
CASE EXAMPLE OF ILLUSTRATING BENEFIT FORMULA

BEST-ESTIMATE ASSUMPTIONS

| | |
|------------------------|-------------------------------------------------|
| ENTRY AGE IN 1980: | AGE 30 |
| STARTING SALARY: | \$25,000 |
| SALARY INCREASE: | 8 1/2% PER YEAR + MERIT SCALE |
| INVESTMENT RETURN: | 12% PER YEAR (PENSION) 11.25% PER YEAR (P-S) |
| ANNUITY PURCHASE RATE: | 12% (CURRENT 7% ALSO) |
| PROFIT SHARING CONT.: | \$4 PER UNIT |

As you can see in Table 15 the relationship between guaranteed benefits and profit-sharing offsets are not that much different than in the first table. The reason is that we have calculated the profit-sharing offset under two different interest rates because the client was not sure whether he wanted to go with the valuation rate or his current rate. You can see the relationships are much the same; the cost patterns are very much the same as the first one. As it turned out for this particular plan, the best-estimate costs were almost identical to the plan actuary's. However, there were so many things going on in the best-estimate valuation, including the ad hoc COLAs on the profit-sharing and the pension plans, that the fact that the costs were almost the same under these assumptions was merely chance.

TABLE 15
 ILLUSTRATION OF BENEFIT FORMULA
 FOR AGE 30 ENTRANT
 (BEST-ESTIMATE ASSUMPTIONS)



NOT MUCH Δ IN RELATIONSHIP!

Table 16 is the second plan I would like to discuss. As you can see it is very similar to the first: 1.6% accrual, a Social Security offset, 100% offset for the profit-sharing plan. Here we have a profit-sharing contribution that is about 6% versus the 4% in the first plan. That will turn out to be the key difference affecting costs under the various sets of assumptions here.

[Table 16 on next page]

TABLE 16

CASE EXAMPLE FOR ILLUSTRATING BENEFIT FORMULA

ENTRY AGE IN 1980: AGE 30
 STARTING SALARY: \$25,000
 SALARY INCREASE: 5% PER YEAR
 PROFIT SHARING CONT. 6% OF SALARY
 INVESTMENT RETURN: 6% PER YEAR

SUMMARY OF PLAN DESIGN✓ RETIREMENTELIGIBILITY: AGE 65

BENEFIT: 1.6% FAS PER YEAR - 1.5% OF PIA PER YEAR (TO 50%)
 - 100% OF PROFIT SHARING BENEFIT

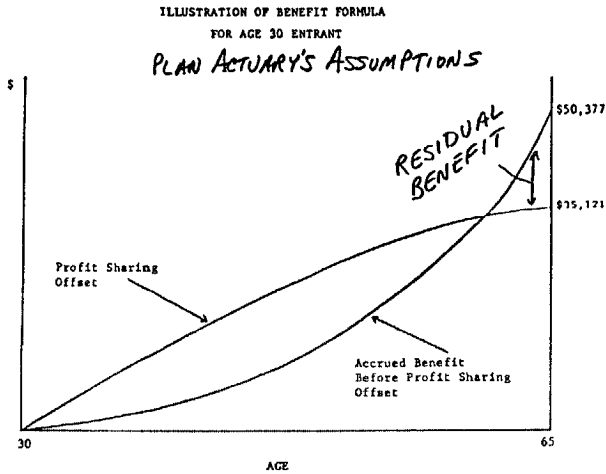
EARLY RETIREMENTELIGIBILITY: AGE 55 WITH 10 YEARS SERVICE

BENEFIT: ACCRUED BENEFIT WITH 5% REDUCTION FOR EACH
 EACH AGE BELOW 62 AND 7% REDUCTION FOR EACH
 AGE BELOW 60

LATE RETIREMENT: ACTUARIAL INCREASE IN AGE 65 BENEFITVESTING: 10 YEARS SERVICEDEATH BENEFIT:ELIGIBILITY: ELIGIBILITY FOR EARLY RETIREMENTBENEFIT: 50% JOINT AND SURVIVOR ANNUITY○ P-S Ctn.: $\approx 6\%$ Salary

In Table 17 beginning with an individual participant analysis based on the plan actuary's assumptions, which are not drastically different from the first plan, you can see the pattern of accrued benefits is pretty much the same as for the first plan. There are slight differences in the shape of the curve out past age 60 and that is only because of the definition of the profit-sharing offset and accrued benefit. In general, you can see that the accrued benefit cost patterns are the same.

TABLE 17



Recapping, there is not much difference between the plans, and the initial assumptions were almost identical.

As you can see in Table 18 this client's set of best-estimate assumptions are not that much different from the first. We have a 13% interest rate and again an 8-1/2% salary scale plus merit.

TABLE 18

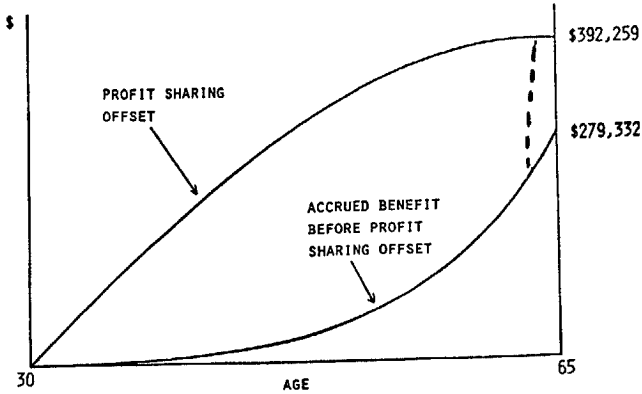
CASE EXAMPLE FOR ILLUSTRATING BENEFIT FORMULA
BEST-ESTIMATE ASSUMPTIONS

| | |
|------------------------|--------------------------------|
| ENTRY AGE IN 1980: | AGE 30 |
| STARTING SALARY: | \$25,000 |
| SALARY INCREASE: | 8.5% PER YEAR + MERIT SCALE |
| PROFIT SHARING CONT.: | 6% OF SALARY |
| INVESTMENT RETURN: | 13% PER YEAR |
| ANNUITY PURCHASE RATE: | 13% PER YEAR |

But notice in Table 19 that an individual in the second plan under these best-estimate assumptions would not expect to accumulate any residual benefit and that pension benefits here are extremely negative. As it turns out there is also no plan cost here at 13% and 8-1/2% salary inflation. In fact, there is no plan cost at even 11% interest.

TABLE 19

ILLUSTRATION OF BENEFIT FORMULA
FOR AGE 30 ENTRANT
(BEST-ESTIMATE ASSUMPTIONS)



NO RESIDUAL BENEFIT!!

Table 20 is for the first private plan we discussed, the one with the \$4 profit-sharing contribution. The current funding method for this plan was actually FIL but I am illustrating entry-age-normal here because I think it is a little bit more enlightening. The new assumptions that we anticipated the plan actuary might use for the 1980 valuation were 8% interest and 6% salary inflation plus a merit scale. This table shows that the two-for-one rule still holds reasonably well. Please notice that if you move horizontally or vertically, you will see our 1% change producing a 10% or 20% change in cost rule does not hold. If you move from 8/6 to 9/6 you see a 40% decrease in cost instead of the expected 20%. The sensitivity of the second private plan is far more drastic than even this one is. A similar table for the second plan would have zero cost out beyond 10% interest.

TABLE 20

PERCENT OF BASELINE E.A.N. NORMAL COST
UNDER ALTERNATIVE INTEREST AND SALARY INFLATION ASSUMPTIONS

| Salary Increase | Interest | | | | | | |
|-----------------|----------|--------|-------|-------|-------|------|------|
| | 7% | 8% | 9% | 10% | 11% | 12% | 13% |
| 6% + Merit | 153.6% | 100.0% | 60.2% | 31.4% | 15.2% | | |
| 7% + Merit | 191.0 | 129.3 | 82.5 | 47.6 | 22.9 | 8.7% | |
| 8% + Merit | | 162.4 | 108.3 | 67.2 | 36.9 | 16.1 | 5.4% |
| 9% + Merit | | | 137.6 | 90.1 | 54.0 | 27.8 | 10.9 |
| 10% + Merit | | | | 116.0 | 74.3 | 42.8 | 20.2 |

MR. CLYDE E. GINGRICH: The title of my speech is "Economic Assumptions for Pension Plans"; the subtitle of my speech is "Actuaries in Wonderland". I am going to read you some perceptions of actuaries that recently have appeared in the press.

First, a very glowing description of actuaries from the Sunday Washington Post, April 19, 1981, entitled, "Actuaries - Math Experts Who Fathom the Unknowable 20 Years Hence". Here is the lead paragraph: "Suppose it was your professional responsibility to make accurate 20-year predictions about the inflation rate, growth of the economy, changes in the labor force and in family patterns, and on the performance of the bond market."

Then here is something hot off the press, Newsweek dated June 1, 1981, showing, in case you have not seen it, a broken watch and entitled, "Can You Afford to Retire?" Of course, this was precipitated by President Reagan trying to "do in" the Social Security retirees. So the lead-off article is on Social Security which is obviously the hottest topic. Then a follow-up article is called "The Turmoil in Pension Plans". Here is what they say about actuaries: "The key players in advance funded programs are the actuaries themselves who work with a witch's brew of economic assumptions, demographic forecasts, and corporate inside information that may not prove accurate in the long run. If they guess right, then XYZ Company's pension fund should perform as promised, but if they are wrong, XYZ's employees eventually could find that there is not enough in the kitty to pay their benefits."

I submit that the Society should use the Post article for a recruitment brochure, and they should insert this paragraph in the Study Note on pension funding to add a little pizzazz.

In preparing my remarks for today, I reviewed the Record for the past couple of years. My first thought was, "What can I say that is new and profound?" I realized it had all been said and said very well. The only thing that seems to have changed is that probably the interest rate and salary scale assumptions are a percent higher than they were a year ago, and if yours are not, you are a year behind. What I would really like to do is go beyond the mathematics and into the world of how it really works, to survey the issues and controversies that are facing actuaries as regards economic assumptions both in the area of funding and as it is developing in the area of benefit adequacy.

Our job is to pick economic assumptions, so the first thing we do is turn to the experts. Let's pick our interest assumption. The aforementioned Washington Post article quoted a prominent actuary from an insurance company as saying, "We asked our investment department what the rate of return on investment was going to be in twenty years and they said we must be out of our minds. Hell, we don't know what it is going to be in two weeks." So there you have it on the interest rate.

Now let's go to the economic assumptions of inflation, salary scale, CPI, and all that. Well, the first thing you learn is that those of us who use mathematical models and view them as somewhat sacred ought to take a lesson from the economists who use various models and prove directly opposing results with equal credibility. So much for the experts. I think what it really means is that we are on our own and ought to dispose of the idea that we are predicting anything, even though we should realize that the public is

going to perceive us as prognosticators. No matter how many caveats we give to our clients the public will eventually view us as prognosticators. What is the impact of this on actuaries?

First of all, actuaries are becoming more visible. In the United States Presidential debates last fall, if I recall correctly, the term "actuarial soundness" was used three times by candidate Reagan. My point is, we are becoming more visible and there is guilt by association - if something goes wrong with pension funding it does not matter how much you consult with the client, it does not matter how well you have explained to him, the client is going to forget that he made the decision and is going to blame the actuary, because he was the financial genius who was supposed to keep things together. So our job is to bring actuarial order out of economic chaos, which I suspect is not possible, but I think what we need to do is go beyond science. Certainly we want to follow our motto which is to substitute facts for appearances where facts do in fact exist, but we need to go beyond mere mathematics and use some of the other skills that we develop along the way.

One of these skills is called "actuarial intuition", otherwise known as the "seat of the pants estimate". I would not belittle actuarial intuition because I think it puts us in a unique position to advise the client not only by simulation but just based upon our experience - what is our gut feeling about where this plan is going in terms of cost and benefits, what is our gut feeling about what is going to happen, what is going to be the trend in benefits in the future.

Another skill we have is farsightedness. Because we do not have to make the pension contributions, we can be more objective; we can ask, beg, or coerce the client into making the kinds of contributions that we think are justified.

A third asset we want to develop is a strong backbone; that is, to be able to say to the client, "This is my best advice to you and, yes, I recognize that this is not very palatable, but this is really how I feel."

I work for Conrad M. Siegel, Inc. in Harrisburg, Pennsylvania. For those of you who do not know where Harrisburg is, we are a suburb of Three Mile Island. We are the only actuarial consulting firm in the nation whose personnel policy provides paid leave of absence for nuclear emergencies. We work primarily with what you might regard as small plans, 50 to 500 employees having a quarter of a million dollars of assets up to at most eight million dollars. We, I think, have a rare advantage in that we have small clients who can allow us to see the total picture: we get to meet with employees, we get to meet with the employer, and we get to see at the grass-roots level what is happening. The substance of our practice is not primarily sophisticated financial analysis, but good down-home, everyday actuarial advice to pension plans.

I would like to review some actuarial fundamentals and just highlight some of the issues that seem to divide actuaries. I am going to cover three points: choosing assumptions, judging assumptions, and some ramifications of explicit assumptions.

The first step in choosing assumptions is to develop our best estimate, and, frankly, in the area of economic assumptions I have a great deal of difficulty doing that. It seems that there is some consensus of opinion that the

real rate of return is somewhere in the area of 3%, the real rate of salary growth is somewhere in the area of 2%, and so you just throw inflation on top of that and come up with some sort of assumptions. One of the ways we have judged assumptions is by their cost impact. We have tried to maintain a consistent level of cost as a percentage of payroll as we have kept up with the higher inflation-oriented assumptions.

Suppose we have our best estimate which, in fact, may be merely a guesstimate. The next step is deciding what assumptions to use, and there seems to be two matters to consider. First of all, how explicit should we be, and second of all, how conservative should we be? I am having increasing difficulty determining what both of those terms mean. There seems to be a sort of actuarial beauty contest as to who can appear the most "explicit" because that seems to be in vogue, and yet I think there are valid arguments on both sides of the implicit/explicit debate. A more fundamental concern, however, is that you can have funding inadequacy using either approach. Maybe the controversy should center on how much conservatism should be in assumptions, and it seems to me that the actuary is caught in the middle of this. The employer wants benefits that will keep employees happy, and he wants them at the lowest cost; while employees want everything from the employer they can get. For example, in the area of ad hoc benefit increases, we are having real difficulty judging how much we should hold back the interest assumption in non-pay-related plans because it has been our experience that with accelerating increases in the dollar pension credit, the funding of these plans (if they are not funded quickly) deteriorates. One solution is to hold back on the interest rate; and the other solution, which I think was just recently published in The Actuary, is to use an accelerated funding period for those situations.

The next issue is how do we judge whether our actuarial assumptions are any good. We judge them in an empirical way by hoping that we achieve stable employer costs every year, and we have been relatively successful in salary-related plans in achieving stable cost as a percentage of payroll. It seems to me that is a fairly safe approach because then neither generation can accuse you of unduly burdening them. In non-pay-related plans, of course, there is this continuing problem of cost spirals.

The other way of judging assumptions ought to be FASB 35, which attempts to measure the current and future ability to pay benefits under a plan. Well, I do not have any problem in measuring the current ability to pay benefits, but what I discovered in some plans is as we go to a higher interest rate, we are devaluing the accrued benefits, and so I am in the embarrassing position of telling the savings and loan client fighting for his life, "Never mind that you have hundreds of thousands of dollars more in assets than in value of accrued benefits; you are going to need it to fund for future inflation." I am convinced there needs to be some margin in a pension fund for future inflation, but it appears to the client that his plan has more money than it needs. Of course, this problem results from the fact that FASB 35 seems to be something of a half-breed. That is, you use an inflation-oriented interest rate but you assume a zero-percent salary scale. I think that is where FASB 35 provides an imperfect measure of a plan's future ability to pay benefits.

To summarize, I think that there are really three challenges facing actuaries, arising out of the crazy economic situation. First of all, I am suffering from a sort of actuarial jet lag having been born into the field of pension

consulting seven years ago in the good old days when ERISA was not yet born and when people still used 3-1/2% or 4-1/2% interest rates without any fear of public embarrassment. Here we are seven years later with a totally new set of assumptions, and we are really not sure how much we should be funding inflation, how fast we should be funding inflation, how much cost we should throw in future generations which will be supporting us in our retirement.

Another issue that is beginning to heat up is benefit adequacy, and sooner or later we will probably be drawn into it. We have been pretty successful in converting many plans over to final-pay formulas in order to provide pre-retirement inflation protection. Now the buzz word is post-retirement inflation protection. Of course, all the actuaries say, "Well, that is too expensive and that settles that." But it does not really settle it because when public opinion starts shifting, we are going to have to deal with it.

The final issue that actuaries are going to face because of, again, matters related to economics is their increasing visibility to the public. We are the experts, and we are supposed to know what is going on; we cannot simply ignore public opinion. We are going to get a good education in dealing with the press, no matter how much we complain about distortions and inaccuracies.

MR. DONALD WEISS: When we talk about the economic assumptions for pension plans, we are usually referring to how we, as actuaries, read the economy, what kinds of returns are available on different types of investments; what kinds of productivity pay increases are likely to be available in a particular plan sponsor's industry? All these, and more, are part of the decision-making process when we choose the actuarial assumptions to be used in funding a pension plan.

This afternoon I would like to look at the subject of economic assumptions from a slightly different perspective. I want to examine the way today's assumptions are discouraging employers from biting the bullet on automatic cost of living increases, how the IRS's interpretation of the 415 limitations is really contrary to their own purposes, and finally, a short evaluation of how actuaries have coped with the confusion the world has thrown at us.

Let's start with benefit increases to pensioners. In its 1980 Corporate Pension Plan Study, Bankers Trust reports that almost three-quarters of the plans in its study increased retiree benefits at least one in the five years preceding the study. We cannot tell from the study how large the increases were or how many of them there were, but our experience tells us that it is the rare plan sponsor who attempts to match a significant portion of the inflation with its ad hoc increase.

Attempts have been made to justify the less than inflationary increases - retirees need less as they get older and start slowing down - they do not do as much traveling or entertaining as before; they do not play as much golf or go the theater as much; they do not need the latest in stereos, home computers or video games.

In other words, the rationale goes like this - retirees do not get inflation matching pension increases because they do not need them. This is answer B on the actuarial exams - the statement and the reason may both be true, but the reason is not an explanation of the statement. The real reason retirees do not get inflation matching increases is that it costs too much - after all, was anybody advocating pensions that decreased when we had a non-inflationary environment?

How has the recent trend in economic assumptions contributed to this result? A little history will help. In the early and middle 1960's, inflation started making itself known. At that time we were seeing inflation rates in the 1 to 3 percent range. We were also making our first serious attempts to deal with inflation: plans began changing from career average to final pay, and some plans adopted the variable annuity concept to protect their retirees.

The variable annuity concept was simple - the plan sponsor would recognize that the investment return on that portion of the assets which covered pensions in the course of payment, which was over some specified level, was caused by inflation and rightfully belonged to the pensioner. Since the specified level usually coincided with the plan's valuation interest assumption, it did not appear to cost anything. Of course, these plans were giving up potential investment gains, but that was in the future; the immediate cost was nothing.

There was only one problem with the whole idea. It did not work. Just when inflation began taking off into the stratosphere, the common stocks which backed the variable annuities went down the tubes. Instead of pensioners getting increases in their benefits, they got no change or worse still, decreases. The reason seemed to be that while common stocks might be a long-range hedge against inflation, in the short term, which is where pensioners live, anything could and did happen.

Having fallen into such disrepute we have not heard much about variable annuities recently. But one plan sponsor, the Rockefeller Foundation, has resurrected the idea, with a twist. They suggest that a pension plan's retired life reserves be invested in short-term interest bearing securities instead of common stocks - the idea being that the interest rate on such securities is the best measure of short-term inflation on top of a real rate of return. The plan sponsor would take the first 3 percent of the return, and the remainder would be used to increase pensions.

The match between short-term interest rates and inflation is not perfect, of course, but it seems to work pretty well. In most years, the technique would have matched more than 90% of the increase in the CPI, and in its worst year, 1971, it would have matched about 60% of the increase. You might expect that an idea that has performed so well would have fairly wide acceptance in the pension community. In fact, virtually no one is following the Rockefeller lead.

One reason, perhaps, is that the idea had the taint of the variable annuity - something plan sponsors have already tried and given up on. But there is a more important reason - cost.

Unlike the old days, when a variable annuity plan could be adopted with no apparent cost, today's plans are being funded at 6, or 7, or 8 percent. Plan sponsors have already anticipated the extra gains available from today's higher yielding investments and are now budgeting pension expense at these new lower levels. Inflation has not caused plan sponsors to increase their pension expense, it has allowed them to reduce it, and it will take quite a while before they will be willing to revert to the higher levels of pension expense as a percentage of payroll that they experienced 10 or 20 years ago.

And so, we get ad hoc increase upon ad hoc increase, ad infinitum. And we probably will continue to get them until plans mature to the point where a pay-as-you-go increase is even more costly than a COLA feature or a Rockefeller type variable annuity.

We turn now to the IRS, and the effect it has had on our economic assumptions in the past and may have in the future. For many years, the IRS took the position that inflation could not be recognized in a plan's actuarial assumptions. So even when investments were earning 6 to 10 percent and salaries were going up by 5 percent or more a year, we had actuarial assumptions which were in the 3 to 4 percent range for investment returns and in the 1 to 2 percent range for the salary scale. By not recognizing inflation, the IRS was presumably keeping plan sponsors from deducting too much pension expense from corporate earnings, but, of course, it had just the opposite effect. Lower return and salary scale assumptions tend to increase cost, not lower it.

It took time and ERISA before the IRS finally began to accept more realistic assumptions. In funding their plans today most employers recognize some degree of inflation - without complaint from the IRS.

Now the IRS may be creating exactly the same situation for themselves. Section 415 of the Internal Revenue Code places limitations on the amount of benefit a pension plan can pay. Specifically, a plan cannot provide an employee with more than 100% of his high 3-year pay or a specified dollar amount, whichever is less. The specified dollar amount started out at \$75,000 in 1975 but has since been increased to \$124,500, a 66% increase in 6 years.

And yet, the IRS insists that a "reasonable funding method" does not anticipate future increases in the dollar level of benefit that a pension plan will be permitted to pay. Presumably this attitude is founded in the belief by the IRS that the plan sponsor is squirreling away too much in his pension fund. Remember now, we are not talking about paying benefits in excess of the limit at any time, we are only talking about funding for benefits which are likely to be substantially below the limit at the time they are paid.

Perhaps you believe that the dollar limitation will only apply to a few highly paid individuals. Let's assume that you have a non-integrated plan that provides 50% of pay at age 65. If you use a 6% salary scale, the 30-year-old hired at \$32,000 or above will be affected, while if you use an 8% salary scale, the 30-year-old making \$17,000 will be affected. In fact, with an 8% salary scale, the 20-year-old hired at \$8,000 would be put in the same "excessive benefit" category as the company president.

What might the actuary do in such a circumstance? One reaction might be to switch from one set of actuarial assumptions, which is "reasonable in the aggregate", to another which is also "reasonable in the aggregate", and which has both a lower investment return assumption and a lower salary scale. This will, of course, result in a higher deductible limit for the plan sponsor, just the situation that the IRS was trying to prevent in the first place.

But the situation gets even worse if you have a plan which provides automatic cost-of-living increases to pensioners, since we cannot fund for benefit amounts which exceed the current 415 limitation even if the benefit does not reach the limit until the retiree is age 70 or 80. In order to avoid funding for such a benefit inadvertently, the actuary might again revert to the use of implicit, non-inflationary assumptions. Such an action might increase the plan's deductible limit by 50%. Again, just the situation that the IRS is presumably trying to avoid.

By the way, here is an anomaly that the IRS's 415 interpretation can lead to. Suppose you have a plan with a 4% automatic cost-of-living feature. The plan is funded at 7% so you establish your retired life reserve at 3%. But in order to comply with the "reasonable funding method" regulation you must be sure that the benefit will never exceed the current limitation. Let's suppose that it will exceed the limitation, so you cut back the reserve to comply with the regulation.

Now let's suppose that you have a Rockefeller type plan. Again, you set up your retired life reserve at 3%, but in this case, you are making no predictions about what inflation will do in the future, you can assume 0% if you like. You are simply promising to give away everything over 3%. So in this case you do not cut back your reserve because the benefit is not predicted to exceed the limitation. The IRS may see a distinction between these two situations, but many of us cannot.

If it is so easy to get around the IRS's restrictions and still preserve the client's objective of making the maximum tax deductible contribution - then what is all the fuss about. Just this. The whole business of picking actuarial assumptions can be mysterious and confusing to our client. It is difficult enough to convince them that a 7% or 8% return assumption is appropriate on a long-term basis when the prime is between 15% and 20% without the additional complication created by the unreasonable interpretation of a reasonable ERISA provision.

Perhaps there is cause to be optimistic, however. The final "reasonable funding method" regulation does allow us to anticipate benefit increases in a negotiated plan to the extent that they are scheduled to take effect in the future. This feature of the final regulation is a reversal from the proposed regulation. Maybe it will not be too long before we see a reversal on the 415 limit as well.

My last topic today concerns the actuary's ability to keep plans on target in an economy that constantly contradicts the predictions of the best economic forecasters. Again, a little history.

One of the ongoing debates among pension actuaries has been whether to use implicit or explicit assumptions. Without rehashing all the points on both sides of the debate, it seems that those who favor explicit assumptions do so because, to them, they represent the closest thing to reality that the actuary can offer. And they may be right. Those in favor of implicit assumptions feel that we may be fooling ourselves when we predict continuing, relentless inflation for as much as 50 or more years into the future. And they may be right.

My own bias is in favor of the explicit approach, but in retrospect it seems that I and my clients have only taken a tenuous first step toward "reality". We were using an 8% investment return for some clients as long as 8 or 9 years ago, and I must admit that some of my East Coast colleagues were shocked. "Do you really believe a pension fund can earn 8%, practically forever?", they asked. It is a sobering thought, and not that easy to answer, recent experience with interest rates notwithstanding.

On the other hand, use a low interest rate, and your client questions your sanity. The use of a 5% return assumption when the prime is going through the roof does lead a plan sponsor to wonder what world you are living in.

But being the resourceful types we are, an answer is at hand, demonstrating the axiom that an actuary is always right - or can prove he is. "It is the spread" we say, and we go on to convince the client that as long as the difference between the return assumption and the salary scale is about 1 to 2 percent, the contribution figures we come up with will be about right.

Is it true? What do we mean by the right contribution? If we take two criteria, stability of the contribution as a percent of payroll and sufficiency of assets to cover the liability associated with accrued vested benefits, I believe that actuaries have been meeting their responsibilities to both plan participants and plan sponsors quite well.

In reviewing the contribution patterns of our clients we found that the contributions as a percent of payroll varied by less than 10% from one year to the next more than 75% of the time. We used long histories as well as short ones, we looked at plans that used return assumptions from 4% up to 8%, and the stability was very consistent. When we looked at the changes that exceeded 10%, we found the principal reason for the large change was either a plan amendment, a change in actuarial assumptions, or the 1977 amendment to Social Security. As you might have expected, the net gain or loss from the investment return assumptions and the salary scale assumption was not the large contributor to the plan's increase or decrease in contributions. If you review your own plans' experiences, you are likely to come to the same conclusion - it is the "unexpected shocks" that really cause funding level changes, not the "everyday shocks".

As to soundness of funding, a recent Johnson & Higgins study on "Funding Costs and Liabilities of Large Corporate Pension Plans" found that the vested liabilities of the Fortune 500 industrials were 80 percent funded, and for the non-industrials the figure was 94 percent.

We tend to think that the "spread" between the return assumption and the salary scale is 1 to 2 percent for all plans, but the 1980 report of Greenwich Research Associates on Large Corporate Pension Funds shows that almost one-third of the plans in the study are using a "spread" that is either less than one-half percent or more than two-and-one-half percent. So the stability of contributions and substantial funding of vested benefits have been achieved even though the actuarial assumptions have varied widely.

There is a law called Tylk's Law which says, "Assumption is the mother of all foul-ups." Perhaps pension plan funding is the exception that proves the rule.

MR. DWIGHT K. BARTLETT: I work for a small pension plan headquartered in Baltimore, Maryland. We have 35 million beneficiaries and 110 million covered workers. Those of you who are used to watching for each year's Trustees' Report, particularly the economic assumptions, as a reference point in choosing your own economic assumptions, may wonder what happened to the 1981 Trustees' Report. The Trustees' Report each year is due by law to Congress on April 1. The first year I was with the Social Security Administration the report went to Congress around April 15. Last year it went to Congress about June 10, and this year I think we will get it up to Congress in June, but I am not sure in which year. I think it was President Nixon who said that in the long run we all become Keynesians. President Nixon had not met David Stockman.

The reason we are running so late this year is that the economic assumptions we use are turning out to be extremely controversial. Traditionally in the Trustees' Report we have had three sets of assumptions which we have labelled "optimistic", "intermediate", and "pessimistic". The selection of appropriate intermediate assumptions this year has become a subject of controversy between those that I might label "traditionalists" on the one hand and the "supply side" economists on the other hand. The supply-side economists want us to assume for intermediate assumptions that the President's economic recovery program will be adopted and will have quite a dramatic effect on the economy fairly quickly in terms of bringing down the rate of inflation to 4% or less within several years, and cause real wage gains within a year or so to be back to 2% or better. Those of us who come from more traditional schools tend to be a little less sanguine about what might happen, and as a matter of fact the only way it looks like we are going to be able to resolve the dispute this year is to have, believe it or not, two intermediate projections.

To satisfy the regular Administration folks we are probably going to label the Trustees' Report on the one hand "what happens if the President's program is adopted", and the other "what would happen if the President's program is not adopted", and there will be quite substantially different economic scenarios shown in the Trustees' Report under those two different situations. We do hope we will get out the Trustees' Report soon, and you will have that reference point for whatever value it may be to you in your own work.

I would also like to mention that I am privileged to serve on the Board of Pensions of the United Presbyterian Church, which covers about 30,000 active and retired ministers and lay employees of the national church. That plan is basically a unit-credit plan, but it has for many years valued its liabilities on a 4% assumed interest rate, and any investment returns in excess of 4% have been used to increase the accrued benefits for both active and retired employees. That plan has worked out extraordinarily well for the participants.

MR. ANDERSON: Thank you, Mr. Bartlett. Before you go maybe you could comment also on the King and Powell paper concerning the economic assumptions used by the Trustees. For those of you who have not read it, King and Powell show that there has been a long-term decline in real wage gains (over and above inflation). They are very critical of the Social Security Administration and the Trustees for constantly assuming that there will be a dramatic turnaround and resumption in growth of real wages.

MR. BARTLETT: That paper was written by Roland King and Keith Powell, who at the time were two actuaries who worked in the Health Care Financing Administration - the sister agency to SSA that administers the Medicare programs. The actuaries in HCFA prepare the Trustees' Reports for the Hospital Insurance and Supplemental Medical Insurance portions of Medicare, and my staff prepares the Trustees' Report for OASDI. For consistency, of course, we have to assume the same demographic and economic assumptions, and the authors of that paper felt that the assumptions used in the 1980 Trustees' Report were more optimistic than they should have been.

I frankly welcomed the paper as a mechanism for opening up to our profession an opportunity to get involved in the discussion as to what the appropriate economic assumptions should be for the Social Security program. I do not

happen to agree fully with the conclusions of the paper and there will be several discussions that will be included, one that I prepared and several others prepared by members of my staff, which will include more detailed rationale for the economic assumptions used in the 1980 Trustees' Report. We now have a staff of about three actuaries who really do nothing other than economic research as the basis for preparing our recommendations for the Trustees' Report.

One failing of the paper was that it really failed to point out that in the last analysis the decision about the assumptions used in the valuation are not made by the actuaries who prepare the report but are made by the Trustees - the Secretaries of Labor, Treasury, and Health and Human Services. Certainly in the demographic area they tend to rubber-stamp what we recommend, and perhaps even in the long-range economic assumptions, but in the short-range economic assumptions the Trustees have their own views which are pretty much tied to the general Administration projections included in the Federal budgets that are prepared. So our hands are tied somewhat in that respect, and I am not sure that it is a very healthy situation.

Some of you may be aware that the Board of the American Academy of Actuaries a year or so ago passed a resolution which in effect asked Congress to adopt a law which would be comparable to the actuarial certification for private pension plans. Right now, for example, my name does not appear anywhere in the Trustees' Report. There is no actuarial opinion letter or anything of that nature in the Trustees' Report. In my own view the Trustees have a clear conflict of interest because on the one hand they are members of the Administration and quite properly in that role they are advocates of the Administration's programs and take an optimistic view of what will happen if the Administration's program is adopted. I think that is a fundamentally different responsibility than that of being Trustees for the social insurance program, and I do believe that produces a potential for a conflict of interest which is not a healthy one. I would like to see a change in that situation.

MR. MURRAY A. SEGAL: I would like to say something pertaining to the comments of Mr. Wiess which I think, together with those of the other panelists, were very interesting and thought-provoking today. One comment that he made was that the real reason why the benefits to pensioners are not increased is simply that it costs more money, and perhaps I could suggest that it be looked upon in a little bit different light.

I do not think that constraint has stopped plan sponsors from increasing benefits for active employees. In certain industries every time they come up for renegotiation, for example, in basic steel or in the automobile industry, as a general rule the level of benefits does get increased for the present active employees and occasionally a bit of a bone is thrown to the pensioners as well. Perhaps the real reason for the lack of increase in pensioners' benefits to reflect increases in the cost of living is the loss of economic clout by the pensioners when they retire. Pensioners cannot go out on strike, they cannot shut down the automobile or steel industries by picketing the plants if they object to the inflation component of the investment income of their money being directed towards better benefits for future retirees. If they had the same sort of powers the active employees do, the problem of post-retirement adjustments would long since have been resolved.

You mentioned the case of the Rockefeller Foundation where they are suggesting the use of a real rate of interest of 3% and then providing increases to pensioners with investment income earned on short-term securities in excess of that rate. I think that we as actuaries have a bit of an obligation to our clients when we use post-retirement interest rates that are much in excess of that 3% real rate, whatever it is, to tell them that we and they are really deliberately planning for pensions that are guaranteed to the client in purchasing power after retirement. If we are going to use something like, or approaching, 7% or 8% rates of interest, then we should really tell them; and if they want to do it, well perhaps the government might have something to say about it and society at large; but we are really telling them that if our projections are borne out by experience, their pensioners will be asked to take declining-value pensions each year after they retire.

You mentioned that not too many places have picked this up yet. There was a recent completion of the Ontario Commission on Pensions here in the Province of Ontario and one of the suggestions that was made by that Royal commission was that there be this sort of provision for increases in pensions after retirement. I suspect that we are going to quite conceivably see some legislation along those lines in Ontario and possibly some of the other provinces in the not too distant future.

I am not sure that a great deal of thought has been given yet as to the mechanics of doing this because while pension plans are, for example, invested in common stocks, the market in Canada has been fairly good in comparison with the U.S. market over the course of the last five years or so, but it does fluctuate and of course there will be years, possibly three or four years back-to-back, when the stock market goes down and inflation goes up as you experienced in the States. Perhaps the answer might be the Rockefeller Foundation approach if and when we get legislation - and I do not think it is really that far away in Canada. Since we have been setting the pattern in any event in Canada for our neighbors to the south - we had pension benefits legislation starting in 1965 and it took the U.S. a little longer than that to come up with ERISA - perhaps the same pattern may develop.

I think it is really on the short-term horizon in Canada, and perhaps the same thing might be seen in the U.S. because the collective-bargaining and other competitive economic forces that exist between an employer and his active employees do not exist in the case of retired people and that there will, I think, be some sort of government intervention in that area, starting possibly in Canada and then being followed up in the U.S.

MR. WEISS: The only point I would add is on your discussion about the pensioners not having any economic clout any more. I tend to agree with you, but still, employers do pay lip service to what they would like to do for their pensioners if only they could afford it. So that on the one hand they at least think they would like to give out inflation-matching pension increases.

MR. RICHARD DASKAIS: When I heard Dwight Bartlett mention the possibility of having two sets of intermediate assumptions in this year's report, one if the Administration's program is enacted and one if it is not, I would hope that the first one is characterized as "if it is enacted and successful", because there may be a difference.

When we talk about plan design and keeping retirees whole, I think we have to keep in mind that for most private employers in the United States the private plan is a supplemental plan which has a smaller total benefit than the Social Security benefit. The Social Security benefit is at least fully indexed, and there is a modest or even no increase for retirees. The retiree is still getting some very decent indexing.

Second, and entirely unrelated point, I am very much an advocate of explicit or high-interest assumptions, or outlandish interest assumptions depending upon how you characterize them, and I am particularly concerned in the dollars-per-year-of-service typical negotiated plan about the use of a low interest assumption such as 4-1/2 or 5% for the purpose of building a reserve when the benefit increases are granted. You still have the increase in cost. Second, when you use costs calculated on a low interest rate for the purpose of informing your client and perhaps the union as to what different parts of this year's pension settlement cost, you are misleading them very much. In my opinion, you are greatly overstating the cost of the increase in the dollars per year of service for active employees, and you are understating the cost of the increases in the dollars-per-year-of-service benefit for retired employees, because for retired employees the higher the interest rate is the higher the cost because increasing retired employees' benefits results in a net unfunding of the pension plan.

MR. GINGRICH: When I was talking about holding back on the interest assumption for non-pay-related plans, I was talking about holding back to the level of 6-1/2% or something like that. We know that our assumptions are going to increase periodically as we try to keep up with the trend, so we often time the changes in assumptions with the benefit increases so that inflation pays for itself.

What I am really talking about - and I am not entirely comfortable with it - is maybe not getting quite as explicit in that area so there is a little something to give away sometime in the future.

MR. ANDERSON: I might add that we had a situation where the problem you mentioned is occurring: a very well funded salaried plan with a string of a half dozen or so hourly flat-dollar plans. All of the plans are invested in a common trust fund so you have difficulty assuming one rate of interest for the salaried plan and a lower one for the others - if you adhere to the idea of an explicit best estimate on each assumption.

I wonder if anybody feels or does not feel that actuaries have a moral responsibility that goes beyond just a casual choosing of assumptions and running off some numbers. I was particularly struck by a paper presented to the Conference of Actuaries in Public Practice last fall by John Hanson (I believe the title of the paper was "Pension Funding Successes and Failures") in which he showed that even using respectable actuarial techniques you can wind up with a plan that goes under water. It strikes me that all of us should give a lot of thought as to whether this is an area where only we can really foresee the problem, or whether we should just try to have others take responsibility for the assumptions and cost methods so we can say we fulfilled our responsibility because we did our calculations correctly, regardless of the outcome.

MR. GERALD RICHMOND: With regard to the assumption of inflation, my company has taken a position that we will not adopt an explicit interest assumption incorporating more than a 2% or a 3% rate of inflation for plan sponsors who are not willing to adopt some kind of explicit post-retirement indexing. Our rationale is that we have been able to get along with a 2% rate of inflation for a long period of time before the seventies when pensioners were pretty well taken care of and did not complain too much, but once the high rates of inflation began and there was much more publicity about it, it was no longer moral to adopt high rates of interest at the expense of the pensioners.