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ACTUARIAL METHODS AND ASSUMPTIONS UNDER ERISA

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1. How do you go about choosing the best assumptions and methods?
 - a. As to interest rates on Taft Hartley fixed dollar plans.
 - b. Separately, for plans where the plan sponsor is in a position to prefer distinctly high costs, as compared to a plan sponsor preferring a distinctly low current cost.
 - c. What latitude in methods should be deemed acceptable?
 - d. What latitude in interest and other assumptions should be deemed acceptable?
 - e. What actuarial response should be made to the pressure for unisex tables?
2. How do you arrive at interest assumptions?
 - a. To what extent should there be consultation with specific money managers and plan sponsors; or with economists?
 - b. What studies are available as to investment earnings, cost of living, productivity, rates of disability, retirement ages, and their relationships?
3. What are the advantages of cost methods that reflect assumptions about new entrants and other changes in the group? Are these methods likely to be acceptable under ERISA? *

MR. PAUL H. JACKSON: The use of the word 'best' stems from the provision in ERISA under which the actuary has to certify that he has made his best estimate. We are not talking about an absolute 'best', but about the actuary as an individual saying that, as to this particular program, this set of actuarial assumptions in his judgment is the best set and he is prepared to put his name down in saying that it is. View this in context with the principle of "continuity" which has been with actuaries for many years without being stated in clear-cut terms. I tried to set it out in a paper entitled Inflation, Interest Rates, and Salary Increases presented at the Montreal meeting of the Conference of Actuaries in Public Practice. Actuaries working for insurance companies end up with blocks of business which are issued on certain sets of assumptions, and a given block of business is generally valued using the same set of assumptions on which it was issued. New blocks may involve different assumptions, but the totality of the enterprise is not faced with a substantial new start from one year to the next, because one year's issues represent a small part of the total. The principle of continuity is equally applicable in the pension field where, if you looked at the assumptions that might have been considered appropriate over each of the last 10 to 20 years, you would find the swings getting sharper and sharper. For plans being valued on a triennial basis, the change in the assumptions that an actuary might wish to make could lead to unreasonable swings in contribution require-

* Throughout the text, the Pension Reform Act of 1974, P.L.93-406 also entitled the "Employee Retirement Income Security Act of 1974" shall be designated with the acronym "ERISA".

ments. In fact, swings so great as to perhaps bring into question whether or not the actuarial profession is really a profession and whether we have any business managing long-term programs.

Application of this principle to the requirements under ERISA is on a personal basis on a plan which the actuary has been valuing for 5 or 10 years. Last year's valuation results represent his best estimate last year; while no doubt smarter this year than he was then, the actuary applies a credibility factor to these two sets of assumptions and ends up on that particular case with a set of assumptions that may differ from the set of assumptions he is simultaneously using to value another plan. In other words, it is a personal best that applies to a particular case. The violation or ignoring of the principle of continuity has gotten the actuarial profession into trouble in a number of situations. The City of Sacramento is one; if the second actuary had looked at what the first actuary had done while asking himself the straightforward question "How far can I deviate from that in the direction I know this Plan should be moved?", he would have ended up with a less extreme step than the one that caused the controversy.

As to the question of what actuarial response should be made to pressure for unisex tables, Mr. Fellers and I have responded with a so-called Unisex Table, although the table can be used either way. Traditional mortality tables are derived on male lives as constituting the bulk of the work force, and while separate female experience may be drawn off, it has been customary to value females in pension plans by using the male table set back five years. The ladies, of course, object to this second-class citizenship. Mr. Fellers and I drew up a mortality table based upon a non-insured pension population which had about a 20% female content. If you want separate male and female tables, you have to set the mortality table forward one year to get a male rate and back four years to get a female rate. Therefore, the two sexes are placed in equivalent positions.

One of the reasons for publishing such a table is that the noninsured pension mortality rates actually experienced have been considerably higher than those on published insurance mortality tables, such as the GAM 1971 group annuity mortality table. Actuaries who wish to use realistic mortality standards and feel uncomfortable with published rates which present rates much lighter than those they wish to use, will at last have something that is not conservative to which to point. The table comes with a table of uniform seniority; those of you who have been involved with 40 or 50 last survivorship calculations will recognize that the use of a Gompertz relationship, or something which purports to be that, which this does, can be most useful.

The unadjusted unisex table could be used to develop valuations, early retirement factors, and joint and survivor option factors for a group with a 20% female content. If you accept, as an approximation at least, the fact that a beneficiary group of spouses would have a sex opposite to that of the employee, you would then be led to the assumption that the beneficiary group would have 80% female content. Therefore, option factors can be developed from this table by the simple device of setting back the age of the beneficiary by three years. Similar adjustments can be made in other cases. This method has been used successfully in some large plans. The actuarial objections to the method are that the female is being overcharged for her option election. This objection overlooks a fundamental desire expressed at the Federal level and throughout certain more activist elements of society for equal benefits. fits. The pension formulas that I work on provide the same percent of pay or the same dollar amount of pensions whether the employee is male or female.

In the case of early retirement, many actuaries have come to recognize that it is a little silly to provide a female employee retiring at 60 with a benefit 3% more than the male counterpart simply because at 65 her benefits would cost 15% more and, if you do not give her 3% more benefit at 60, her benefit will only cost 13% more. This same argument applies, of course, in the case of the options. If the female employee elects an option, she may or may not be over for the option depending on whether or not you take into account anti-selection and other factors, but the fact of the matter is, the benefits she received for herself and her spouse probably have a greater actuarial value than the benefit which the employee would receive.

Finally, we come to the point of inflation which we have committees of the American Academy of Actuaries now studying and telling us all about. One of the factors creating problems with actuarial assumptions today is the matter of inflation. Inflation does not eliminate problems, it changes them. In the Canadian Institute of Actuaries recent meeting, for example, it was stated that whereas back in 1941 the problem was stated "you can't take it with you" -- today the problem is "you can't make it last until you get there." That, of course, is what pensions are all about and is the one hope that the defined benefit plan has going for it under ERISA, namely that without such a plan the individual relying on a pocket full of common stock certificates may in reality end up at the age of 80 starving to death.

MR. RICHARD DASKAIS: I was one of the actuaries required to pass Part I when it was a Language Aptitude Test on "Reading Comprehension and Precise Knowledge of the Meanings of Words" at the college sophomore level. My aptitude in these areas has been actuarially certified in English, not in French. Sections 302(c) of ERISA and 412 of the Internal Revenue Code require the use of actuarial assumptions which in combination offer the actuary's best estimate of anticipated experience under the plan. There does not seem to be any ambiguity in that language. It does not call for conservatism; it does not call for continuity. Nor does it say to extrapolate mechanically from past experience. It requires the actuary to take into account the experience of the plan and reasonable expectations in determining his best estimate. I would agree with Paul in that I wish the law had introduced the concept of continuity, but it does not.

The best estimate is a single number, not a range. The only way I know to calculate a best estimate cost is to use my best estimate of all the significant assumptions. If the actuary wants to balance conservatism in one assumption with optimism in another, the only way he can really determine that he has a balance is to do a valuation using his best estimate assumptions singly in addition to using his offset assumptions. Since the actuary must do the valuation using his best estimate for each assumption, there does not seem to be any reason to search for biased assumptions which balance each other.

Our interest assumption applies to investment returns for many years in the future, on present funds, and on future contributions. For all but the smallest fund, the plan sponsors and the trustees are making investments in the same marketplace. Small to medium-size funds may find their way to this marketplace through commingled funds of insurance companies, or commingled funds of investment managers, while large funds may invest directly; but they are all in the same market. Furthermore, each fund can change its investment policies and its investment managers with quite short notice. No fiduciary is going to make a long-term commitment to a particular manager. In a common marketplace with freedom to change investment managers, how can the actuary expect radically different long-range investment results in different funds?

He can not.

This means that the interest assumed for a Taft Hartley trust can not be much different from the rate for a single employer trust. Perhaps Taft Hartley trustees have been more conservative, meaning a fixed income bias, in the past. Presumably that justified a lower interest assumption, but even this investment policy resulted in higher actual yield in the last few years. The law does not give the actuary any flexibility in choosing assumptions to produce the client's desired level of cost. The best estimate means one number.

The plan sponsors can choose among the acceptable techniques as to the actuarial methods and asset valuation methods. If the experience follows the assumptions fairly closely, there is not going to be much difference in cost based upon differences in the way alternative actuarial methods treat gains and losses; amortization over 15 years is about the same as spreading over the future working lifetime. The ability to manage cost through methods is likely to be based largely on the difference between accrued benefit methods and projected benefit methods. However, this is probably going to be limited to plans which are not final pay plans. Valuing a final pay plan on an accrued benefit cost method produces quite artificial results, particularly if you try to use the pro-rata projected benefit concept which was in the exposure draft of the Academy Committee on Principles and Practices. The sponsor of a plan with a large past service cost already has a wide range of flexibility between 40-year amortization and 10-year amortization.

I believe, contrary to the Congressional Conference Committee Joint Explanation on ERISA, that an employer may continue to account for pension costs on different actuarial assumptions than those used for funding. If the employer has adopted an accounting policy of not recognizing pension costs (for example those associated with pay increases) until the related pay increases occur, it seems that this accounting policy could be continued. This method might be quite appropriate on a pay-related benefit for hourly-paid employees.

The life insurance origins of our profession have encouraged conservatism. This is reflected in our training and in our Guides to Professional Conduct. However, we must recognize that conservatism tends to protect some parties to a pension plan, but it may harm others. The parties helped are not necessarily the plan participants. Suppose, for example, that a level of benefits is being negotiated between an employer and a union and that costs are being considered. Conservatism helps the employer to get more credit for the pension than he would using best estimate actuarial assumptions. The actuary's conservatism does not appear to help the employees because they get a lower pension benefit level than they would if best estimate assumptions were used. Perhaps they will get a lower wage increase because the cost of the pension plan has been overstated.

Prior to ERISA most actuaries were not as well qualified to determine long-range interest rates as financial officers of our clients, economists, and others. The passage of ERISA has, unfortunately, not made us noticeably better qualified; knowledge and experience, like morality, cannot be legislated. However, ERISA has given us the responsibility to select a best estimate interest rate. Our work as actuaries keeps us in fairly close contact with financial executives, money managers, and perhaps economists, but we should use the product of their thinking, rather than try to do their work with less skill. Fortunately, the product of their thinking is available in the form of the interest rates on long-term investments on which borrowers and

lenders are making transactions in an active, well-organized market. The starting point for our determination of long-range interest rates has to be the rate set by the market since it reflects the current judgment of the same group of people that will determine the future demand and supply curves for money.

Although pension fund managers may not invest the majority of their funds in fixed income obligations, they have this option and they always must compare their expectations for alternative investments with long-term debt. The present rate should be dampened toward historical rates rather than dampening historical rates toward current market rates, leading to somewhere between 7% and 8% as a current rate. I just cannot find it within me to use a rate of 5½% or 6% when sophisticated financial officers are borrowing long term at 8½% or 9½%. They must believe that long-range rates are not going to go down much; otherwise, they have the option of borrowing short-term and refinancing.

The interest rate can be thought to consist of an inflation element and a pure interest element. Similarly, general pay increases may consist of an inflation element and a productivity element. The difference between the interest rate and general pay increase therefore comes down to a difference between pure interest and productivity. If the pure interest rate is 3% or 4%, and future productivity is 1%, 2% or 3%, the difference is between 0% and 3%. I am happiest with the difference of 1% or 2%. From this we can get a pay increase assumption consistent with the interest assumption. Of course, once you get the general pay increase assumption, you have to make several adjustments to produce a salary scale. These may be for merit and seniority increases, or decreases in annual pay due to decreases in working hours, and for any conditions peculiar to the employees.

MR. DONALD R. FLEISCHER: All of you are familiar with forecasting in one form or another and most have been involved in meetings where the client asks, "What is my accrual cost going to be next year?" This is a forecast in itself, but the more formal Forecast Valuation Method is based on a more sophisticated computer technique for forecasting pension plan liabilities. Many actuaries have been involved with forecasting the asset side, but my discussion will be limited to the liability side.

In the past, forecast valuations have usually been limited to purely administrative type valuations, where results are used for determining the employer contributions, but not the tax limits for IRS purposes. Since these administrative valuations are in fact being used to determine contributions, it seems logical that they should be acceptable to the IRS in computing tax-deductible limits rather than having to go back and do a more traditional valuation just to satisfy the IRS requirements. Because it is necessary to have the technique documented before it can be accepted as an appropriate actuarial method, I have written a paper to accomplish this task.

The forecast valuation method is designed to fund toward a benchmark liability over a given number of years as a level percent of payroll, or as a level cost per employee. The benchmark liability may be any figure deemed appropriate by a qualified actuary, but an effective choice would be the liability for accrued benefits. Projected benefit methods generate contributions as a level percentage of payroll, but in the long run tend to result in excessive funding. Accrued benefit methods on the other hand achieve the desired objective in the long range, but contributions tend not to be level. The forecast valuation method tries to combine the best of both methods by funding towards the desired objective as a level percent of payroll.

In determining a contribution level, the forecast valuation method uses variations on the assumptions generally used in traditional valuations. Perhaps the most important variation is the assumption of future new entrants to the work force. Under current valuation techniques there is an implicit assumption about new entrants, not with respect to how the work force will grow, but as to its characteristics. For example, the entry-age valuation method observes that the normal cost percentage for a given case will remain constant in the future; in other words, it assumes new people will be hired on average at the same age as the average entry-age of the current group. Changes in the new entrant assumption can have significant impact on the level contribution and, therefore, great care is required of the actuary in consultation with management to develop an appropriate assumption. It is essential to consult with management on assumptions of this type, because for them to believe in the results you are developing, the assumptions should tie in with any assumptions they are making in other projections for the firm.

As important as the new entrant assumption is, it is perhaps the most difficult to make because it depends so much on the growth of the economy, the industry, and the individual company. Changing the distribution of new entrants not only affects the size of the work force, but the general characteristics of the work force. To my knowledge there are no generalized statistics available to help in choosing this assumption and, in any event, it really is best related to the outlook of the individual company.

With all the uncertainty about the new entrant assumption, the question arises as to whether it is appropriate to make any assumption at all. Such an assumption is most appropriate, because even in the traditional actuarial valuations there is an implicit assumption about new entrants. Therefore, unless there is complete agreement with the assumption which is made, another assumption should be made which is more appropriate. While traditional valuation methods have no implicit assumption about the future size of the work force, this assumption is crucial, especially in the forecast valuation method where the goal is to fund towards the benchmark liability as a level percentage of total payroll. As the actuary is charged with developing costs that remain a level percentage of total payroll, it is incumbent upon him to do all in his power to make the best estimate he can, including an assumption about new entrants to the work force.

Another question in regard to the forecasting technique is, "When is it appropriate?" It is appropriate for any financial planning purpose. As a valuation method it is probably most appropriate in salary-related plans where there is no immediate plan to drastically change the plan provisions in the near future. For such pension plans, the forecast valuation method also eliminates the need for an annual valuation because the costs are projected automatically over the near future, and if the assumptions are realistic and substantiated in the short run, the forecast valuation needs only to be done once every three years. If the forecast valuation is to be accepted by IRS for determining tax-deductible limits, a test case will probably be required. One company is thinking about it, but no decision has been reached in that regard. One basic consideration for the forecast valuation is that it can be utilized as an appropriate standard for comparison in line with the latest approach of the American Academy. Alexander Smith has commented further that forecasting is a very powerful tool and should be used to assist the client in the development of his business plans.

MR. JACKSON: Marc Twinney has prepared for the meeting a five-page document entitled "30 & Out Retirement Experience" which sets forth the rate of early

retirement the Ford Motor Company experienced among its hourly-rate workers under the Auto Plan. It shows the experience in 1971 when they first went to an unreduced benefit at age 58 with 30 years service, the experience resulting from an "Age 56/30 & Out" provision effective October 1, 1972, and the experience resulting from the full "30 & Out" provision which became effective October 1, 1974. Marc would probably caution that these rates cannot be accepted as representative of the long-term future. The experience in the auto industry has been that, as bargaining took place and as the worker recognized the chance of generous improvements in pensions, the rates of retirement declined to an absolute minimum, consisting of those people moving out of state or becoming disabled. As soon as a generous provision becomes effective, the rate of retirement in the following months actually amounts to one or two years expected retirement.

In the "Age 58/30 & Out" experience, taking the entire group of people eligible for early retirement (including those under age 58 who could retire with a benefit reduced by 8%) about 28% of the group retired in the first year. Restricting the consideration to those over 58 who could retire on a non-reduced benefit, the percentage of eligibles retiring was 58.9%. The "Age 56/30 & Out" experience, one year later, produced a total rate of about 16% and the rate among the age 56 and over group was 27.8%. Partly, the rates tend to decline because as one of the provisions becomes effective you have people at the later ages who have gone well past the first date for eligibility but who have not yet had the opportunity to elect retirement; this "catch-up" group dwindles upon successive improvements. On the full "30 & Out" retirement, there was a 27% retirement rate from the eligible group in a four month period. The numbers are fairly sizeable, in an absolute sense, since there were 5,578 eligible to retire and 1,510 actual retirements. The rates are generally borne out by the General Motors experience which evidenced even higher rates. For example, the "30 & Out" experience for the four months October through January, showed 6,600 retirements based on 19,500 eligible people so that the rate in a four month period was 34%. One thing this suggests is that early retirement benefits are utilized extensively by the rank and file workers.

Following is a transcript of the paper prepared for this Concurrent Session by Marc M. Twinney, Manager, Pension Department (Finance Staff) of the Ford Motor Company:

"30 & OUT" RETIREMENT EXPERIENCE

This note describes the retirement experience under the Ford-UAW Retirement Plan's "30 & Out" provision. The provision to retire with 30 or more years of service, regardless of age, was introduced in the plan in 1971 as a result of the 1970 agreement. The provision, which expanded on the supplemental allowance concept introduced in 1965, provided substantial supplements before age 65 so that an adequate portion of income was replaced before the receipt of Social Security. This adequacy distinguishes the benefits from most other plans providing retirement after 30 years regardless of age. Employees eligible for voluntary early retirement under the "30 & Out" provision alternatively may become eligible at any age for disability, and at age 55 for involuntary early retirement. Only voluntary retirements of healthy lives are included in the experience.

Experience

Questions of interest to actuaries in regard to costs and benefit design involve the rates of retirement by age for the three key benefit increases when employees knew about the increases in advance. These increases occurred on October 1, 1971, October 1, 1972, and October 1, 1974.

The data are presented in three tables. Table I is an outline of the early retirement benefit provisions. These are explained in greater detail at the end of the note. Table II shows the retirement experience by age during the first year in which the life income benefit was unreduced at age 58 and over, and the first year at age 56 and over. Table III shows the experience the first four months in which the benefit was unreduced at any age compared with unreduced benefits at age 58 and over.

The rates are select. In 1971 employees at ages 58 and 59 became eligible to receive the unreduced benefit, in 1972 employees age 56 and 57 became eligible to receive the unreduced benefit, and in 1974 all employees became eligible for the unreduced supplements and post-age 65 benefits. The exposure available is the number of eligible employees at the beginning of a calendar year.

The total first year experience for all retirement ages under the age 58 provision was 27.5%. The total second year experience for all ages under the age 56 provision was 15.7%. This compares with aggregate experience for retirement ages with unreduced supplements of 58.9% in the first year and 27.8% in the second year.

With regard to the 1974 provision which provides no reduction in total benefits based on either age at retirement or on age at receipt of the benefits except for coordination with the Social Security benefits, it is too early to report a full year's experience. Because of the heaping of retirements at the beginning of the plan year starting October 1 or the calendar year, it may be risky to place too much credibility on the first four months' experience, October through January. Something, however, can be learned by looking at the experience for the first four months. To evaluate this experience, it is compared in Table III with the first four months' experience under the age 58 provision. The total first four months' experience for 1971 under the age 58 provision was 17.8%. The corresponding total the first four months for 1974 under the any-age-unreduced provision was 27.1%.

Comments

An observation on the age 58 and age 56 experience in Table II is that a high proportion of eligible employees retired within one year. In the aggregate, 58.9% of those eligible for age 58 unreduced supplements retired in the first year. This is in sharp contrast with the small percentage of eligible employees who retired at ages before age 57. Many of those who retired at age 57 were close to age 58 and, therefore, were not deterred by the minor reduction in their benefits. The 8% reduction factor apparently was sufficient to make almost all of the employees under age 57 postpone their retirement. The low rate in the age 55 to 56 category supports this conclusion. Further, such employees were aware that within one year benefits would be unreduced.

In the second year, 27.8% of those eligible for unreduced benefits at age 56 retired, approximately half of the rate for the prior year. The rate at ages 58, 57, and 56 were within a half a year of the age at which no reduction occurred in their benefits and, hence, a substantial number retired while only

TABLE I

Monthly Benefits and Age Reductions for Retirement
Before Age 65 with 30 or More Years of Service

Unreduced Benefit From	Effective Dates	Earlier Retirement Age Reductions	Total Benefit Before Age 62/Age 62-65
Age 60	10/1/65	by 60/n from age 60, where n is number of months before age 65	\$400/\$400
Age 58	10/1/71	by 8% a year from age 58	\$500/\$450
Age 56	10/1/72	by 8% a year from age 56	\$500/\$450
Any Age	10/1/74	not applicable	\$625/\$395

TABLE II

"30 & Out" Experience

Age at Retirement	Age 58 Unreduced - First Year Effective October 1, 1971			Age 56 Unreduced - Second Year Effective October 1, 1972		
	Number Eligible Jan. 1972*	Number Retired Oct. thru Sept.	As % of Eligible	Number Eligible Jan. 1973*	Number Retired Oct. thru Sept.	As % of Eligible
64	130	42	32.3%	116	22	19.0%
63	199	96	48.2	115	35	30.4
62	299	210	70.2	188	82	43.6
61	463	309	66.7	299	77	25.8
60	653	402	61.6	294	58	19.7
59	651	403	61.9	397	92	23.2
58	717	371	51.7	535	153	28.6
Subtotal	3,112	1,833	58.9%	-	-	-
57	691	219	31.7	649	196	30.2
56	636	26	4.1	654	187	28.6
Subtotal	-	-	-	3,247	902	27.8%
55	607	6	1.0	620	74	11.9
54	575	3	0.5	563	12	2.1
53	518	6	1.2	457	6	1.3
52	410	1	0.2	465	7	1.5
51	398	1	0.3	483	0	-
50 & Under	666	1	0.2	552	1	0.2
Total	7,613	2,096	27.5%	6,387	1,002	15.7%

* Includes employes retiring in October through December

TABLE III

"30 & Out" Experience

Age at Retirement	<u>Age 58 Unreduced - Four Months</u> Effective October 1, 1971			<u>Any Age Unreduced - Four Months</u> Effective October 1, 1974		
	Number Eligible Jan. 1972*	Number Retired Oct. thru Jan.		Number Eligible Jan. 1975*	Number Retired Oct. thru Jan.	
		Number	As % of Eligible		Number	As % of Eligible
64	130	31	23.8%	114	31	27.2%
63	199	54	27.1	193	64	33.2
62	299	140	46.8	228	93	40.8
61	463	202	43.6	334	87	26.0
60	653	299	45.8	389	115	29.6
59	651	275	42.2	466	140	30.0
58	717	272	37.9	510	115	22.5
57	691	51	7.4	524	158	30.2
56	636	17	2.7	525	155	29.5
55	607	6	1.0	471	131	27.8
54	575	2	0.3	481	124	25.8
53	518	4	0.8	506	108	21.3
52	410	1	0.2	357	85	23.8
51	398	0	-	229	44	19.2
50 & Under	666	1	0.2	251	60	23.9
Totals	<u>7,613</u>	<u>1,355</u>	17.8%	<u>5,578</u>	<u>1,510</u>	27.1%

* Includes employes retiring in October through December

a mere handful of employes with 30 years' service retired below age 55.

The second year's overall rate of retirement was lower than the first year's for two reasons. Employes age 59 and over were out of the select period of the first year of being eligible for the unreduced benefit, and employes on October 1, 1972 were within one year of the contract's reopening date, September 14, 1973, when provisions would be subject to amendment.

In regard to the unreduced-at-any-age provision, the total experience for the first four months was higher than the similar total under the age 58 provision but relatively close for ages 58 and older where the provisions were comparable in not reducing benefits. Extrapolating the any-age experience on the basis of the calendarization of the age 58 provision, the total rate for the any-age provision for a full year would be 41.9%.

One other observation concerns how the rates of retirement were insensitive to age when (a) all age reductions were removed, and (b) the immediate benefit increased to \$625 on October 1, 1974. For example, for employes at ages younger than age 50, the rate was 23.9% compared with an average of 26.2% for all ages younger than age 62. The rates for ages 58 and older, of course, were not select in regard to unreduced immediate benefits to the same

extent as the rates for ages younger than age 58.

This experience is based entirely on Ford Motor Company's plan and the employment conditions at that Company. In other times and other circumstances, and for other employers, experience may differ from the results reported here.

Benefit Provisions

Effective October 1, 1971, the plan first provided retirement eligibility regardless of age for employees with 30 or more years of service. The total monthly benefit payable before age 62 was unreduced for retirement at age 58 and over, but reduced by 8% per year for retirement at ages before age 58. The total monthly benefit payable was \$500 until age 62 and \$450 from age 62 to age 65. At age 65 the basic rate of \$7.25, \$7.50, or \$7.75 per month per year of service was used to determine a life income benefit. Prior to October 1, 1971, the total monthly early retirement benefit payable before age 65 was based on \$400 and was unreduced only for retirement at age 60 and over.

One year later, on October 1, 1972, the 8% reductions were changed to start at age 56 so that employees that were age 56 and over could retire without reductions in the total benefit.

When the new agreement became effective on November 19, 1973, the plan was amended as of October 1, 1973. The October 1 changes did not affect the total early retirement benefit until March 1, 1974. On that date, the \$500/\$450 supplements changed to \$550/\$320, recognizing Social Security benefits payable at age 62. This change in total benefits led to a somewhat higher than usual rate of retirement of employees age 62 and above prior to March 1, and a lower than usual rate of retirement of employees after March 1.

Effective October 1, 1974, the total monthly benefit payable increased from \$550 to \$625 until age 62 and to \$395 payable from age 62 to age 65, but with no reduction in the total benefit based on retirement age. Also, on reaching age 65 the life income benefit, determined using a basic rate of \$9.25 to \$10, was unreduced for retirement age for payments thereafter. In addition, these retiring employees were eligible for a monthly lifetime supplement of \$75 payable at age 65, so that the plan provided \$375 at the \$10 basic rate, \$300 for 30 years of service plus \$75 from the supplement.

The total benefit amount above was achieved by supplementing the basic life income benefits. Supplements payable before age 65 were subject to an earnings test which was based on the earnings test under Social Security for benefits before age 72. The earnings test may be a factor in discouraging retirees from reentering the work force through employment with others.

CHAIRMAN BLACKBURN H. HAZLEHURST: I would like Don Fleischer to lead off on the first of a series of questions I will address to the panel, since it relates to what he has been doing. Don, you present a defensive view in saying that an open group method seems interesting, that maybe the IRS will not approve it, and that maybe everybody thinks it is a little exotic, but one ought to take a look at it. Let us shift the attack and put the rest of the panel on the defensive. There is a provision in ERISA which says that the actuarial method must be reasonable. Let us investigate what "reasonable" means. Those of us weaned on Trowbridge's cost method discussion, in TSA Volume IV, may have come away with a definition such as, "holding costs stable as a percentage of payroll for a salary-oriented plan or as a level cost per man for a dollars-per-month type plan." Yet the method many have used has

been an entry-age normal method which is essentially a closed group method. Consider, for the sake of argument, the hypothesis that the definition of reasonable method to comply with the law means that the costs must remain stable as a percentage of pay for a salary-related plan or on a cost per man on a dollars-per-month plan. Such a standard seems to imply that you must look at an open group, since stable means stable for years to come, and a group will not be closed for many years except in rare instances. According to ERISA, the normal actuarial report must provide, in addition to specified information, "such other information as may be necessary to fully and fairly disclose the actuarial position of the plan." Can this be done without referencing how adequate the cost method is towards maintaining a stability of costs on an open group basis, that is by comparing the close group processes to open group processes if open group processes have not been used directly?

MR. FLEISCHER: I certainly agree. First of all, the open group method would have to be considered a reasonable one from a defensive point of view. On the offensive, you raise a very interesting point, but I would take issue with your definition of reasonable. A reasonable method is not necessarily one that keeps costs stable each year into the future, but probably is one that keeps costs following some type of normal progression. For instance, for a dollar-per-month plan, a standard unit credit type valuation is still a reasonable approach to follow.

CHAIRMAN HAZLEHURST: You are saying then that reasonable could be defined in terms of an orderly array of costs. As long as it is orderly, even if the cost curve over a period of time starts low and increases to a relatively higher level or, conversely, starts high and decreases to a lower level, you think it is all right.

MR. FLEISCHER: That is right.

MR. DASKAIS: Frequently, without formally using an open group technique, I determine an entry-age normal cost based on my judgment of what the new entrant distribution is going to look like. This does not permit any difference in the new entrant distribution this year from the distribution assumed to exist five years from now or ten years from now -- which the open group would permit. I may use the actual employee data for employees who have been hired in the last two or five years for this normal cost estimate, but I still retain the closed group, which, to me, produces more representative level costs than Don is attempting through the use of the forecast method.

Begging the question of the ultimate objective, if you use 40-year funding with a salary scale and an interest rate one or two percentage points more than the salary scale, your minimum funding standard account requirement is about the same no matter how the costs are distributed between past and current service, because the average temporary annuity is very close to the 40-year certain factor. This is not true if you use a traditionally high interest rate, like 7 or 8%, on a dollar-per-year-of-service plan. The 1945 Bulletin on Section 23(p) of the old 1939 Internal Revenue Code explicitly states that the use of single average entry-age is acceptable.

CHAIRMAN HAZLEHURST: What do you feel about the notion of "reasonable"? What methods do you consider within a family of reasonable cost methods under the law?

MR. DASKAIS: An accrued benefit method on a final average plan should be

excluded from the family. Use of the entry-age normal method with the new entrant assumption is probably more reasonable than to blindly use the existing data on all generations of new entrants, if the objective is a level cost.

MR. JACKSON: I would first like to express my appreciation to Don for writing a paper on the projected method because it gives the actuary another tool. It is unfortunate that sometimes, in order to praise a particular tool, we have to point out the flaws in the other methods. Funds developed on an entry-age normal funding method, if a plan were to be fully funded, are not always excessive. Where you have generous early retirement benefits running over a range of ages such as 45 to 65, i.e. where pension liabilities are greatest, the entry-age normal past service liability at any given point in time is insufficient to provide the full early retirement benefit. But, on an entry-age normal basis, you have somewhat lower actuarial losses. It is not that the fund is excessive, it is merely less deficient in the plan that experiences a surge of early retirements.

Regarding the use of new entrant assumptions, when one views the entry-age normal cost method, assuming the entry ages of the people in the future are not going to differ considerably from those in the past, the normal cost would presumably come in with about the same percentage of pay as that for the existing group. The issue then reduces to whether or not it is reasonable to spread a portion of the past service liability on the existing group over new entrants. This has been done in appropriate cases and is a worthwhile tool for the actuary to have.

The experience of Penn Central is probably quite different from that to which most actuaries are accustomed and is worth introducing into a discussion on "reasonable" methods. If, in the early years of valuation, unit credit costs had been accepted as being reasonable, as the accountants would say, Penn Central would not be in a position to support a pension plan today. The rather minor number of occasions where the new entrants cease coming into the group are probably those very occasions where it is most important to have followed a conservative funding method. Otherwise, the beneficiaries are most likely to be the ones to suffer.

CHAIRMAN HAZLEHURST: You reduced the issue of "reasonable" method to the question of how the past service cost is to be amortized by predicting that new entrants in the future will have the same characteristics as new entrants in the past. Should not the actuary be concerned with, and address himself explicitly to, the question of whether the distribution of new entrants in the future will be similar to that of the past. Further, if conditions are to be different, should he not indicate the extent to which he feels his method will change and have a trend line to illustrate those differences? Do you think the actuary should speak to an open group approach?

MR. JACKSON: It is difficult enough to estimate things that can be tracked, without trying to estimate things that cannot be tracked. Admittedly, there could be extreme cases; for example, where a group consists today of workers who were hired at the fairly low average age of 20. It would be possible to project that in twenty years they will be hiring new entrants at the age of 45 and certain changes should be made in the basic calculations on that basis.

These changes are automatically handled on the entry-age normal cost method. The pattern of normal costs from year to year follows the current changes in

ages of hire. This is the type of experience actuarial forecasting ought to be based on rather than a long-term possibility. If you want to look at long-term possibilities, the one to anticipate is that there will be no new entrants, i.e. will the funding under those circumstances be sufficient to assure that the promised benefits will be delivered by the plan, since at that point the sponsor is likely to be unable to support the plan on his own?

CHAIRMAN HAZLEHURST: We will return to your other key point in a moment -- that is, that a method which may be reasonable for the plan sponsor may, for the same reason, be unreasonable or less reasonable for the plan participants. But, first to another question -- if any of us think we are fiduciaries under ERISA, we have to be interested in what other "experts" are doing. What are other experts really doing in choosing their interest assumptions?

The Chase Manhattan Bank survey of interest rate assumptions showed assumptions concentrating around 6%. However, that survey gave no indication of what salary scale was used. If the salary scales had been available and it appeared that they were not adjusted for some or all inflation, you could conclude that the real underlying interest assumption commonly in use was perhaps more than 6%. What do you think actuaries across the country are using, in terms of a real underlying interest assumption?

MR. JACKSON: I can best speak for myself. I am probably on the low end of the scale, on the conservative side. That is very comforting considering ERISA, despite the requirement that the actuary use his best estimate. This is not the best estimate, because the law specifically says the actuary must use his best estimate. If the actuary is a fiduciary, he has his own personal fortune on the line. The circumstances under which he is likely to be sued by someone are at either extremity; there is a great likelihood of suit if his estimates develop a fund that falls short of the total requirement and frustrates the benefit expectations of many of the people covered under the plan. He can also be sued by such groups as the Secretary of Labor, Pension Benefit Guaranty Corporation, etc.

There is a point to be made on the interest assumption. As Dick Daskais pointed out, the actuary has to look at the going rate for long-term bonds. Whenever you take a closed group and go to the record of the bond market and make an effort to immunize the fund so that you have cash income that exactly matches outflow, you are immediately impressed with the fact that while there are many long-term bonds, most of them have call provisions at an earlier date. What you are left with is really a series of high interest rate short-term bonds that may be paid off at a premium. In the March 3rd issue of Pensions and Investments, William Howard, Professor of Finance and Insurance at the University of Florida, had an interesting article on the hazards of long-term calculations on current yield. Looking at a 30-year accumulation and assuming 5% interest, 58% of the yield that is anticipated comes in from principal and simple interest, and 42%, less than half, comes in from the reinvestment of the interest income to the end of that 30-year period. When you get to an interest rate such as 8%, two-thirds of the total interest at the end of the 30 year period has come from reinvestment of interest received during the period. This is where actuarial judgment is required. Although there may well be 8½%, 9%, or 10% bonds floating around, the actuary who assumes 8½%, 9%, or 10% as his interest rate is not necessarily merely reflecting the existence of those securities. He is also hypothesizing that, as interest is received in the future and the principal is refunded in the future, it will be possible to reinvest at that rate of interest, and the higher the rate of interest assumed, the heavier the weight placed on that assumption.

CHAIRMAN HAZLEHURST: You did not mention a number.

MR. JACKSON: In the Wyatt Company, when we go to see what the experts are really doing, we ask ourselves what the other Wyatt Company actuaries are doing. In 1969, the range of actuarial interest assumptions centered in the 4% to 4½% range. This set of assumptions has been moving up so that today, probably 5% would be a central interest rate. My cases currently range from 4.75% to 6%. I have not ventured into the 7% or 8% area. The salary scale used with a 5% interest assumption would generally be on the order of magnitude of 1%, 2% or 3%, which are essentially noninflationary; or with only a modest 1% perhaps.

CHAIRMAN HAZLEHURST: So, if you had to settle on a combination, maybe 5%/2% would be it. If you viewed that something nearer 5% or 6% would be more likely for the salary scale, then you would have to add something on to that 5% interest assumption to come up with the underlying expectation. Is that a reasonable statement?

MR. JACKSON: The results that we developed for one plan which was included in the paper for the Montreal meeting of the Conference of Actuaries in Public Practice showed that a 5%/2% combination on that particular case with that degree of maturity in funding would require an 8% salary scale along with an 8% interest assumption in order to develop a comparable cost. The difficulty is that, when you are asked to move off 5%/2% basis to something really realistic such as 7%/7% or 7%/8%, there is a decrease in contribution requirements coming at the end of the period where practically every plan that I work on has experienced actuarial losses. This may be at a point in time when our clients need some relief from some direction, but I am not sure in the scientific sense that the need for relief is justification for a change.

MR. DASKAIS: I would agree with Paul entirely on what is being used. The 7% or 8% that I referred to is what I have used on new plans that will be subject to ERISA or for studies we have made for our clients anticipating ERISA.

CHAIRMAN HAZLEHURST: What do you feel is equivalent to the explicit 5%/2% assumptions found in a pre-ERISA valuation report in terms of implicit, more individually realistic assumptions.

MR. DASKAIS: It depends upon the maturity of the group and the maturity of the funding. For the center of the range, a 3% change in salary scale would be equivalent to about a 2% increase in the interest rate.

CHAIRMAN HAZLEHURST: So you are back perhaps to your 7% or 8% real underlying expectation if you are looking for level costs.

MR. FLEISCHER: I have seen movement from 5% interest assumptions getting closer to 6%. Many people are switching to 6% interest, some are backing 2% or 3% off the interest assumption to arrive at salary increase assumptions.

CHAIRMAN HAZLEHURST: Perhaps actuaries do not always nestle in that closely with investment matters. They scratch the surface and forget the underlying problems. Consider a mathematical problem in defining what is best. Suppose that we knew with respect to long-run investment returns that 9 times out of 10 we would get an 8% return. (The level is unimportant, the numbers are chosen to add up.) The 10th time we would get an 18% return. The arithmetic mean would be 9%. Under these circumstances, what is the proper interest

assumption from the point of view of ERISA's "best" estimate? When you select "best" assumptions, do you mean that you want actual costs to be less than your estimated costs exactly 50% of the time, or are you looking for the average financial expectation regardless of frequency of occurrence.

MR. DASKAIS: I would try for the mode rather than the median.

CHAIRMAN HAZLEHURST: Is it reasonable in different circumstances to identify a different approach for different clients. For example, in one situation could you identify, characterize, and disclose that your best assumption is intended to mean that you think at least 50% of the time the actual yield will exceed the assumed yield, while in another situation indicating that you have chosen an assumption so that you expect actual yields to exceed the assumption at least 75% of the time; or occasionally you might say that the average financial expectation is x% even though perhaps less than half the time you think it will actually be achieved? Do you think that you could define your "best" in those terms in different situations?

MR. DASKAIS: You could, but I would not. There was a lawsuit several years ago where the client in a single plant situation did not assume any plant closing. Obviously, the plant will either close or it will not close. It was assumed that it would not close and was stated in the assumption that no allowance was made for the special steelworker benefits in the event of plant closing. There is an analogous situation in the interest assumption.

MR. JACKSON: The Pension Reform Act does not imply that the term "best estimate" means seeking some mathematically determinable figure that can be supported on a statistical basis. In the context of the Act, every administrator of a pension fund is required to employ an actuary. The requirement that the actuary use his best estimate is intended to imply that, when the administrator employs an actuary, he does not get a hack, he does not get an individual who has an acceptable mathematical range in interest from 2% to 14%, depending on what the administrator wants. The intent is to bring to bear on these plans some mature financial judgment. Dick Daskais was not disagreeing with me as much as he thought, because if I happen to arrive at my best estimate currently by a weighing of past experience as well as my current assessment of the situation, this is still my "best estimate" under the Act. The actuary is to take everything into account that he has seen happen since last year and, in effect, he is required to give it an appropriate weighing, and having done so, that is his best estimate. I view each one of these situations on its own merits and try to make things right.

CHAIRMAN HAZLEHURST: Suppose that the plan sponsor is currently very profitable, but because they are working on limited contracts, they would rather set aside a lot of money now, while conditions are good. By contrast, imagine another group which is growing at a furious clip and which expects and intends to commit to a program but would rather defer some of their cash outlay and some of the cost consideration to a later date. Assuming they are investing in the same fashion, in fact that you are using the same fund, would you give any credence at all, in your choice of assumptions, to the differences between those two situations.

MR. JACKSON: The actuary has to look at the individual situation. When looking at a program run by a municipality or a single employer, a contributory plan, a negotiated plan, you end up with different entities exhibiting different characteristics which ought to be taken into account.

CHAIRMAN HAZLEHURST: Would you make any distinction in your degree of conservatism in what you think is best, based on the situation of the plan sponsor.

MR. DASKAIS: Changing the assumptions is not the appropriate place to reflect the differences in the attitudes or needs of the plan sponsors. The report would be entirely different and would certainly show the expected position of the fund if the limited contractor lost his contract and did not have enough money to pay pensions, etc. But this might lead the plan sponsor to choose a more conservative funding policy; with 10-year funding there is considerable latitude. It is not appropriate for the actuary to bury in his actuarial assumptions the making of business decisions for the plan sponsor.

MR. FLEISCHER: It is not appropriate to make the assumptions reflect the particular business of the plan sponsor, but perhaps within the forecast method itself you could reflect such differences. With a growing industry you would assume that many more employees will come into the firm. If this is a valid assumption, it would tend to at least lower the cost as a percent of payroll. Hence, within reason perhaps conditions may be reflected in the method as well as in the actual contribution chosen between the permitted minimum and maximum.

CHAIRMAN HAZLEHURST: The notion of "best" is not crystal-clear under the law. The actuary may or may not be a fiduciary, but the law certainly says in so many words that the enrolled actuary is to be hired on behalf of the plan participants. There is no question about that. Must "best" then be taken within the framework of what is best for participants exclusively, subject only to the limitation that, if you bankrupt the plan sponsor, the participants are not too well off; or can a generous measure of what is best for the plan sponsor be mixed in when methods or assumptions are being selected?

MR. FLEISCHER: Your primary objective is to pick the method best for participants. Whether you are a fiduciary or not, you are right on the verge anyway.

MR. DASKAIS: With regard to early retirement rates, we have some experience on a company that has about 1,500 or 2,000 retirements per three-year contract period for a plan which tends generally to follow the UAW pattern. There is a wide range of wage rates and earnings among the hourly employees because the company has a lot of incentives which are somewhat different from the basic automobile industry. The retirement rate is heavily correlated to the replacement ratio of income. That is, under the \$500 contract, the employee who was earning \$650 or \$700 per month was much more likely to retire than the employee who was earning \$900 or \$1,000 per month.

MR. JACKSON: Let us pursue further the issue of early retirement. Marc Twinney observed that the reason for the Ford experience being somewhat lighter than that of General Motors was that the workers of Ford have substantially more overtime than the GM workers, and that the election of early retirement depends on the relationship between the income after as compared to that before retirement. Although the contract is the same, the pre-retirement income was greater for the Ford worker. There was a study made by the University of Michigan some years back of the rates of early retirement among auto workers. They found a threshold level which, in the mid-sixties, was something on the order of \$400/month (a combination of retirement income from the plan and from Social Security). Below that level the only retire-

ments taking place were the absolutely necessary ones, and above there was actually election taking place. Today, that level is most likely very close to \$600 to \$700. Inflation and the current conditions affect this level, because the worker is less likely to retire in an unstable situation. The worker is unsure as to what is going to happen to the relative purchasing value of his pension which is pegged to increase at some fairly stable rate. Offsetting this hesitancy is that, with substantial layoffs, younger workers sometimes bring rather excruciating pressure on the older worker who is eligible for early retirement and who would not totally lose his income if he were to retire, in order to preserve a job for some younger worker. The pressures may become even greater now that some of the Supplemental Unemployment Benefit (SUB) funds have been exhausted.

CHAIRMAN HAZLEHURST: I wonder if actuaries who have traditionally been forward-thinking, liberal, and clear in their view, may yet discover some beauty in the term filibuster.

Paul, you mentioned Dr. Howard's comment that, if the yield rate is high, then close to 2/3 of the expectation comes from reinvestment rather than from current investment--an excellent point. However, the Allison-Winklevoss paper says that the other way around. It says, look out, you may have a long-term reinvestment rate in mind, but the immediate investment rate, if it is going to last for a while, really does have an impact on the situation. Suppose your view is that 5% will be the long-term investment rate, but that the fund is largely invested in equity securities and at the time of your valuation, the market value of these equity securities is 30% below what it has been on the average for the last several years. What should be done, if anything, about the fact that your assets seem to be temporarily depressed and that you may expect a one-time non-recurring gain.

MR. JACKSON: You are suggesting that the actuary knows that the former level of the assets was the true level and that the current level is temporarily depressed. One could also argue that the former level was temporarily elevated and that we have now reached the true level of value in these securities. An illustration will serve to answer your specific question. In 1967, on one large account, after considerable study of investment results under the program, we assumed 6% as a valuation rate of interest. And while your question is posed in terms of the higher yields that are available on current investments, that fund from that day to this has not earned 6%, and I doubt that very many others have. On that basis, I am not faced at this point with an excess of actuarial gains from interest which are embarrassing.

CHAIRMAN HAZLEHURST: Let us pursue another question. When selecting an interest assumption, do you go, or can you responsibly not go, to the money managers who are responsible for implementing specific strategy and ask them what they think, and to the plan sponsor who seems to have an inalienable responsibility for overall strategy to ask him for his expectation. Do you go further, and if not, how do you justify not doing so?

MR. JACKSON: The actuary would like to get as much information as he can from as many sources as possible, and if an answer could be obtained from those people, I would certainly try to get it. I have attended some sessions with retirement committees where the investment advisors have been presenting their experience and their reasons for it, and the knowledge gained has not led to a firmer assumption as to interest. Instead, it has led me to the question of whether high school drop-outs would not be well advised to enter the investment field.

MR. DASKAIS: We should seek everybody's opinion, but, because of the ability to change money managers and change investment policies, it may not be possible to give a great deal of weight to the opinion of the current money manager or its current staff, as opposed to what money managers in general expect. Although it is difficult to ascertain that asset values are depressed, if there is such a temporary depression, it should be adjusted for, either by movement in the interest rate or by some movement in the asset value with explicit statements as to why.

MR. FLEISCHER: It would be more appropriate to have an interest rate that varies by calendar year. Making no decision is a decision. I am not changing the interest assumption, but, if something should be done, then perhaps having a rate that varies by year into the future would satisfy a desire of the actuary to reflect the current high yields on investments in the valuation.

MR. JOSEPH P. MACAULAY: How do you work out an interest assumption for a plan which has a fairly large amount of current assets invested at older rates in the 4% to 6% range and also has some equity investments which at the moment are depressed - try 30% as was stated. You have an asset valuation method which uses some kind of smoothing technique, and you are going to be systematically lowering the funding value of those equity assets if there is no future gain. If you assume that the assets at the current true market value are going to earn a certain amount, how do you take these items into account in developing an interest assumption? Probably yields lower than 7% to 8% should be assumed for somewhat mature funds with large investments in both older debt instruments and older equity investments.

MR. JACKSON: One of the points that is purely accidental here, but which favors the beneficiary is the fact that, if the market value of assets drops sharply, the contribution rate increases, and if the market rises, the contribution rate decreases. You have greater amounts going into the pension fund at a time when security prices are depressed, and lesser amounts going in when they may be overpriced. Following that approach, a higher long-term rate of interest would be justified, compared to where you think you are going to come out in the final analysis. I am not disturbed by the fact that the market value currently is down; if it stays down and remains down, the fact that I put it down this year when it went down merely means that I have fewer adjustments to make in the future.

MR. DASKAIS: The purpose of an asset valuation technique which smooths fluctuations is to prevent having to reflect all in one year the change in costs due to changes in asset values. This is in line with Paul's principle of continuity. We ought not to take a smoothed value of assets and then try to anticipate the change by modifying the interest rate assumption because we then will have undone the effect of smoothing by artificially adjusting the interest rates.

MR. JOHN W. WOOD, JR.: We are really at the fringe of knowing what we are doing actuarially, because so many topics have come up with so many new directions to them. The projection valuation is a particularly fascinating topic and I suggest that it be given much more elaborate treatment at some future meeting of the Society. The real value of the projection valuation is to look at it as something aside from the regular valuation because it is more understandable to clients; it follows the way they make other economic decisions. One assumption which can be made in the projection valuation, which obviously could not be used in reporting to the IRS, is the anticipation of plan improvements. For instance, one might assume that normal retirement age

would be reduced one year over each of the next five years, from age 65 to age 60.

MR. MANUEL F. CASTELLS: Whenever we talk about using inflation in salary scales and tying it in with inflation on the asset side, a question arises in terms of the flat dollar plan. Salary increases are, after all, under the control of the plan sponsors as are increases in the flat dollar amount. Is there any thought that the IRS will balk at the assumption of increases in flat dollar benefits over the future - or, on the other hand, a unilateral increase for cost of living to retirees. These assumptions are included in valuations in England from the beginning.

MR. DASKAIS: The question is, are you trying to make an economic projection of pension cost for the plan sponsor, or are you trying to determine the cost of the plan that is embodied in the document? Unfortunately, in the salaried plan, the plan document says that, if there is a pay increase in the future, it is going to affect pensions whereas in the \$6 per year service plan, it says that such a pay increase will not affect pensions. Therefore you get what might be considered inconsistent results. The logical extreme of anticipating future benefit increases is permitting an employer who does not have a pension plan to deduct the current cost now for the pension plan that he is going to put in when his employees have enough longevity to be interested.

MR. SHEPHERD M. HOLCOMBE: As has been mentioned, using an inflation element in assumptions can give us a dilemma. The types of situations that can produce this result, including that mentioned by the previous speaker, are:

- a. Periodic and regular negotiations with unions which increase the flat benefit (i.e., x dollars per month times years of service) to keep up with inflation. Even though the plan is fixed at the present moment, should the benefit be projected if an element of inflation is included in the assumptions?
- b. A negotiated plan provides that the benefit level will be based on the rate of contribution by the particular employer at the time of retirement of the employees (e.g., an employer contributing 6¢ per hour would have a retirement benefit of \$8 times years of service; an employer contributing 8¢ per hour would have a benefit of \$10 for each year of service; and an employer contributing 10¢ per hour would have a benefit of \$11.50 times years of service). It is almost certain that younger employees will end up with at least the \$11.50 benefit even though the plan has not negotiated such a benefit at this time. Should this kind of projection be included?
- c. A company has given ad hoc increases every two or three years over the last 10 years to retired employees to recognize the increase in cost of living at least to some extent. If it is the company's announced intent to continue this kind of increase although it has not been written into the plan, to what extent can such anticipated increases be recognized?
- d. A plan covers earnings in excess of the maximum average social security covered compensation, which is put in the plan on a dollar basis since the particular local IRS office will not allow this to be stated in words and thus automatically change. The short table has been used in the past and has been changed three or four times over the last 10 or 15 years to keep up with social security changes. It is clearly stated by management that it is their policy to continue such changes as social security in-

creases. Cost estimates including an element of inflation for a salary scale will produce much too large numbers unless social security could also be projected.

To continue this illustration further, let us use this last example and consider three valuations which were done:

1. Using 5% interest and 2% salary scale and assuming the social security covered compensation table presently in the plan remains static: normal costs come out to \$100,000.
2. Cost estimates done using 6% interest and 5% salary scale again with social security being held at the present levels: normal cost \$1,000,000.
3. The same assumptions as in 2 except that social security covered compensation is also increased by 3% inflation: resulting normal cost \$150,000.

It seems clear that the proper level of normal cost is probably in the \$150,000 area, yet if we use our "best estimate assumptions" but stick with the covered compensation as specified in the plan, we have a ridiculously high cost.

There seems to be two possible solutions:

1. Use assumptions of something like 4% investment return and 2% salary scale. This can perhaps be justified on the basis that the plan by using a fixed covered compensation level does not admit to future cost-of-living changes and, therefore, such changes should be excluded from any assumptions.
2. Use a funding method which only relates to the current period of time which is what the covered compensation in the plan in effect relates to. Such funding method is a unit credit funding method which projects the salary for the current year. It measures the current year's cost as the difference between the projected accrued benefit liability at the end of the current year over the cost of the accrued liability as of the end of the immediately preceding year. Thus, not only is the cost for the unit attributable to an additional year of service covered, but also the increase in cost in the value of all previous units due to the increase in salary.

While this funding method apparently would generally not be acceptable under the most recent draft recommendations of the Academy of Actuaries Committee on Actuarial Principles and Practices in Connection with Pension Plans, it is a method which has applicability in certain circumstances and should be available as an acceptable method provided it is applied on the basis described above.

I basically agree with Dick Daskais that it is improper to project a benefit that is not in the plan (i.e., this approach can be carried to the extent of projecting a pension cost for a company that does not yet have a pension plan) and, therefore, one of the two approaches I have suggested must be appropriate to solve the problems outlined initially.

CHAIRMAN HAZLEHURST: The law has now turned something which was a gift, or at least voluntary, into a promise hemmed in with all kinds of restrictions so that the plan sponsor is almost placed in an adversary role. In fact, all

of his fiduciaries are supposed to ignore him and look only to the participants. Given that kind of forensic environment, should the plan sponsor feel that the best kind of funding no longer is level cost, but minimum cost? Maybe you should consider the method producing the least possible funding necessary under the law, with anything else simply being set up on the books of the company to keep as many options open as possible.

MR. DASKAIS: My attitude towards funding is different from what has generally been explicitly said here this morning. The funding policy of the plan sponsor, typically the employer, relates to alternative uses of money and the tax advantages of funding or the tax disadvantages of not funding. Furthermore, the funding should not necessarily be tied to accounting. Much of the discussion this morning relates to funding for a predetermined security objective, but most employers, rightly or wrongly, seem to think they are going to be in business for all practical purposes forever.

MR. JACKSON: I disagree. The employer who has better uses for his money in alternative investments should not promise a pension to employees. He has that alternative. And if he does promise it, the law suggests that he is supposed to meet certain requirements, and now he has to. Being hemmed in with 5% and 100% excise taxes, the threat of involuntary terminations by the Pension Benefit Guaranty Corporation (PBGC), and a recapture of 30% of what the PBGC defines as his net worth, a plan sponsor is probably in a position where he would hope that his actuary develops a set of costs that postpones such an evil day.

MR. DASKAIS: I am not that much in disagreement with Paul, for the thrust of the comment was that perhaps the employer should be contributing more than he is charging, rather than less.

MR. ARTHUR W. ANDERSON: One of the most difficult problems in choosing assumptions is in the offset plan because, under it, you not only have to project the basic percentage of final pay, but also have to deduct an amount from the resultant benefit. The amount deducted often comes very close to the original item itself and makes the difference very unstable. You will find that most old offset plans are overfunded, because they were based on static assumptions. Now, if you go to dynamic assumptions and your client is absolutely insistent on the fact that inflation will be 3% and general wage increases will be 5%, and he tells you that his salary increases over the foreseeable future are going to be 5%, what interest rate do you pick?

MR. JACKSON: If my client tells me that, I suggest that he apply for enrollment before the IRS and sign his own certification, because obviously what I pick is not going to satisfy his desires. The client is out of the picture in that regard in the future. He may well have his preferences, and if he disagrees strongly enough with the assumptions that I feel in that case are reasonable, he has the option of hiring another actuary and disclosing why he did it.

MR. ANDERSON: I was trying by hypothesis to pin you down to the interest rate question. How do you approach the offset plan? Would you use any different assumptions or do anything special because it is an offset plan?

MR. DASKAIS: For offset plans, one approach is to assume that the replacement ratio of Social Security will be about the same as it is now. In other words, it does not seem appropriate to blindly follow the automatic escalatory provisions of the law, although they come fairly close if you use the right

pay increase and cost-of-living combination. You can solve for a cost-of-living and pay increase assumption, but I would assume that the Congress will somehow keep the replacement ratio where it is now, somewhat begging the question of what the replacement ratio is.

MR. PAUL A. GEWIRTZ: A discussion amongst some actuaries in the New England area approached assumptions from the point of view of basic derivations. It started in attempting to pin down in an uninflated economy, the real rate of return on investments. The real rate turned out to be between 3% and 4%; still, based on an uninflated economy, we concluded that the average compound salary scale from merit, productivity, and seniority would exhibit a 2% long-range effect.

On top of the uninflated package of $3\frac{1}{2}\%$ interest and 2% compound salary scale, we applied a 2% level of inflation, resulting in $5\frac{1}{2}\%$ interest and 4% salary scale. For an offset plan, the typical related factors would be a 4% wage rate increase and 2% seniority increase. What we found troubling was that the higher the element of inflation included in interest and salary scale components, the more likely that an inflated environment pursuing that degree of inflation will exhibit an experience of post-retirement cost-of-living increases. If that were the case, then in choosing a 7% interest rate and a $5\frac{1}{2}\%$ salary scale, one should probably also insert a long-range post-retirement cost-of-living increase, probably two-thirds or one-half of the 2% level. But, this leads to an approximate percentage of payroll which is much the same as that at $5\frac{1}{2}\%$ interest and 4% salary scale. The spread between them does not have any magic about it, but, if you keep this spread between the interest and the salary scale, it is not true that maintaining the same spread is going to give you a stability in cost. There is no such stability. The underlying problem is the ignoring of what is going to occur post-retirement. That is why we tend to be conservative in recognizing 2% for inflation and, therefore, need not insert anything for post-retirement increases.

Now as to funding methods, consider a pension plan as being very similar to a mortgage on a house. It would be extremely misleading for a banker to tell a person that a \$50,000 mortgage is going to cost \$75 per month carrying costs, and neglect to mention that five years from now it will escalate to \$200, and in 15 years it might be \$750 a month. The banker must tell a person what the level cost is so that the prospective mortgagor may determine whether he can afford to carry such a mortgage, or if he should be looking elsewhere for a cheaper house or a lower mortgage.

The pension plan should be treated the same way. The actuary is the one equipped to disclose the long-range cost commitment of the promises the employer is about to get into, and should not try to rig things so that the employer can best afford it now, but end up five or ten years from now worrying about catching up. The employer has this commitment and must realize what the cost is. If he feels that he cannot afford the plan right now, but may be able to in the future, the question should not be ducked by changing methods or assumptions to make the costs fit the desired pattern. At best, the furthest I would go is to do a dual calculation within the same report, or in a letter perhaps to the client, and display what the client's method would reveal as to the emerging cost patterns as well as what the actuary thinks the best estimate should be.

When it comes to certification to the government, the actuary's method should be the basis. The important thing is the disclosure of the long-term funding pattern. I do not make a distinction between the cost for an accounting

charge purpose and that for the employer meeting his commitment. The actuary's client is no longer just the employer; it is also the participants, the funding adequacy is of true concern to them. Before we rethink for the client's best interest, perhaps we ought to sit down with the participants and make them party to our discussion.

MR. DONALD S. GRUBBS, JR.: Several of the comments and questions are related to what might be approved by the IRS and I would like to comment briefly on that issue. My views do not necessarily represent those of the IRS. First, regarding the acceptability of valuation method. ERISA lists in Section 3 certain specific methods which are acceptable; it does not say that others would not be. Therefore, other methods not specifically named would be acceptable subject to regulations and rules that will be developed. It is an open question at this point. The methods that are listed might not necessarily be appropriate in all situations; the fact that the method is listed does not mean that it is all right for all plans.

In deciding whether a method is satisfactory, I think we might put it into the context of the intent of the law, both with respect to maximums and minimums. The whole purpose for having a maximum deductible limit, like any other deduction for expense under the Code, is to take the expenses that are properly attributable to a year and charge them to that year. Thus, when we are looking at the maximum deductible expense, the IRS has taken the viewpoint that this is a cost of employment and ought to be suitably charged over the working lifetimes of the employees. Within that, it would be a somewhat new approach to assume that you can properly charge to the current year expenses relating to employees whom you may hire next year or the following year. That does not mean that we would not accept new approaches; it is merely that it would be a new approach. With regard to funding minimums, Congress focused their attention upon the funding of benefits for present employees, and I would be interested to hear from the panelists whether they feel it was the intent of Congress to establish those minimums in relation to employees who might be hired in the future, i.e., to base the present minimum funding requirements on cost relating to them. The most speculative feature of this method is with regard to the assumptions made regarding new employees, and I am in complete agreement that it is the most speculative element. That does not, as I say, indicate any policy.

Let us look at the larger context of assumptions. I was rereading recently discussions in the Society held in the early 1950's in which some of our finest actuaries were discussing whether we should use 3% or 3½% as an interest assumption. This was the best thinking of our profession at the time. I bring it up, not to make fun of those who said that, but to say that the best thinking that comes forth out of this meeting may look just as strange 20 years from now. We are making long-term assumptions, and live in an uncertain world. Some have suggested that the world is undergoing such economic, sociological, population, and resource changes that assumptions of the past may not give us good guidance for the future. One thing that appears fairly evident is that the rate of change is accelerating and making it even more difficult to select assumptions for the future. In this context, how in the world are assumptions supposed to be regulated? There should be a broad range within which capable, thinking, responsible people can use their best judgment. At the same time, if you do not have any controls at all upon the situation, you have effectively defeated the minimum requirement. Somehow you have to allow for this range of responsible decision making and also put some controls on the people who seem to have judgment which is very far out.

MR. DAVIS H. ROENISCH: I would like to alert members of the Conference and Society that the questions that have been discussed today have in recent experience become very, very pertinent. Actuarial opinions are being sought not only as to the opinion of the original actuary on the proper funding levels, but also from a second actuary who reviews the first one. Then you have audit accountants coming in to review the first and second actuaries and the government reviewing all three. The acceptable and reasonable range of levels of contributions among actuaries who have thought things through very carefully and formed strong opinions, is somewhere in the order of 2 or 3 to 1. My question becomes, the eminently practical one, namely, in which ways can actuaries operate so that they do not destroy the credibility of the entire profession in the cases, particularly large ones, where a range of opinion of that order arises from people, each of whom feels very strongly about the set of assumptions he is using.

CHAIRMAN HAZLEHURST: An excellent summary of the problem that is the issue behind everything that is going on here today. If we cannot really come to grips with these matters in a way that will permit us to face our peers and the world, we are going to have problems. I will give each panelist a chance to answer that question, and to take up to two minutes to offer any rebuttal that has been stirring in his mind for the past two hours on any question he wants.

MR. JACKSON: Dave has brought out a fundamental question. My approach to it has been a theoretical one up to this point - namely, that, if a fellow professional has worked on something, I will consider his results as part of the input that is to be utilized in determining an overall end result. One recent situation arose where the actuary who valued a particular program three years ago used assumptions which in my judgment were totally unacceptable, unrealistic, and too liberal. There was a temptation to say that my fellow professional had just gone off the deep end, and that we should develop the right answer and let him hang out there looking as foolish as he wished. Instead, I decided to practice what I have been preaching by moving absolutely as far in his direction as possible. Subsequently, I observed that he did not like the assumptions either, but, as a practical matter, was faced with an alternative that this group was not going to pre-fund their life and health insurance benefits for retired employees unless he could come up with something to get them started on the road on a minimal level. Therefore, having applied my principle, I can say it works. The former actuary was not embarrassed and the plan sponsor is contributing more, as the former actuary might have developed had he been working on it. In applying this principle of continuity, all of us should follow the approach that the British Institute has tried to foster: we should respect the professional judgment of our fellow professional and recognize that there are differences of opinion and try not to bring these differences in a startling and shocking fashion to the general public. Rather, if we think his results are off in one direction, we should try to move in the direction we think is reasonable. An illustration of the point might be a transatlantic liner on which a pilot is brought aboard to correct the heading of the ship. It is inappropriate to say that the boat should not be here, that it ought to be somewhere else.

MR. DASKAIS: We are all trying to use our own best estimate. No one here has indicated that he would let his client in any way dictate assumptions. We should recognize that the law itself recognizes that the actuary's predictions or best estimates may not be entirely borne out. That is one of the reasons why we have a PBGC. We owe it to our clients to point out the possible results if the plan should terminate--what the possible 30% of net worth

charge means to them. That may create some much heavier funding than would otherwise occur.

MR. FLEISCHER: Let us say that you have two actuaries who come up with totally different types of contribution patterns and a third actuary is called in to arrive at his best estimate. This might be a perfect situation for the use of a forecast to show, given a contribution strategy, where the plan is going to be at various points in time based on this third actuary's best estimate of the liabilities in the future. Through the use of the projection method it would be possible to show the client and the government what the relative impact of the two actuaries' different assumptions and contribution rates might be with respect to the client's and participants' future situation.