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PENSION FUNDING AND VALUATION

Moderator: MARTIN STEMPEL. Panelists: DAVID A. DANIELS, IAN A. D. HOLDEN, CLAUDE Y. PAQUIN, THOMAS D. SLOAN

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MR. MARTIN STEMPEL: I would like to begin by introducing the members of the panel to you: David A. Daniels, Assistant Vice-President of Alexander & Alexander, Inc.; Thomas D. Sloan, Vice-President and Associate Actuary of The Equitable Life Assurance Society of the United States; Ian A. D. Holden, Group Actuary, Pensions, of Canada Life Assurance Co.; and Claude Y. Paquin, President of Actuarial Consultants of Atlanta, Inc. and a practicing Attorney-at-Law. In the audience are Josiah M. Lynch, Jr., President of Actuarial Computer Technology, Inc. who will present his paper later in the session and Larry H. Weitzner, Associate Actuary of The Wyatt Company, who is the recorder for the session. Mr. Paquin will start the session by presenting his paper.

MR. CLAUDE Y. PAQUIN: I have been entrusted today with the not too difficult task of presenting my paper, entitled "A Review of Actuarial Cost Methods for Defined Benefit Pension Plans, " and with the more difficult task of commenting upon the effects of the Employee Retirement Income Security Act of 1974, ERISA, upon valuation methods.

Let me first briefly introduce my paper to you. You will, of course, have the opportunity to discuss it shortly, though I realize that the late mailing of the paper may have caused this opportunity to be more theoretical than practical.

The paper's basic purpose is to introduce the subject of pension costs in a way which emphasizes the concepts and reasoning behind the methods, rather than the calculation techniques themselves. The question, "What will my pension plan cost?" is natural enough, but it can really only be answered by a counter-question of the form,"How do you want to pay for it?" This almost inevitably leads to the further question of what payment methods are available, and

this is precisely what the paper seeks to present: the traditional ways of financing defined benefit pension plans, and the concepts underlying each of these ways.

Hence the paper might serve as a good introduction to the financing of pension plans, both for the layman and for the actuarial student. Formulas have been provided for the latter's benefit, although they, too, are simple. A simple numerical illustration is provided, where no assumption ever changes: only the actuarial cost methods change. This paper does not seek to develop mathematical ability, just the ability to grasp the basic concepts which underlie the mathematical structure to be erected upon these concepts.

There are three important concepts developed by the paper: (1) the cost of delay in the financing of pension plans, (2) the cost of retroactivity where benefits are to be available on account of "past service" (roughly, the employment period before the decision to provide benefits was made), and (3) the great degree of flexibility available with respect to the incidence of financing costs, principally through the device of a separately amortized supplemental liability. In the process of developing these concepts, through a rather simple illustration, the paper attempts to explain the terms past service, current service, and future service, as well as the term normal cost.

The paper performs two incidental functions. First, it serves to show, without really having to demonstrate it as it is so apparent, the hopelessness of the current pension nomenclature hodgepodge. For instance, while the so-called "initial liability" can no longer be frozen under ERISA, which mandated a thaw, reference is still made in ERISA itself to a "frozen initial liability cost method." In the old pre-ERISA days, the initial liability could indeed be frozen through the process of simply paying enough interest, each year, to prevent it from growing. Now, the principal itself must be retired over a number of years, generally between ten and thirty. Hence the illogic of the name.

The second incidental function of the paper is to show, rather indirectly, that defined benefit pension plans are inherently discriminatory. The value of a given amount of retirement benefit is vastly larger for the older employee than it is for the younger one. Depending upon the point of view, the younger employee is either discriminated against, or the older employee is discriminated in favor of. The Internal Revenue Code, section 401(a)(4), forbids discrimination in favor of certain classes of employees in either "the contributions or the benefits," and, apparently, equal benefits, though of unequal value, do not come within the prohibition at all. In the old days, where employers could discriminate in their hiring practices on account of age, they could control the value of the pension benefits that an employee could obtain as a fringe benefit by hiring only younger ones. Now they can't. In fact, some form of antiselection is now possible: without other controlling factors, the young employee could go to work for an employer with a defined contribution plan, and when older could then go to work for an employer with a defined benefit plan. When pension benefits were associated with a career spent in the employ

of only one employer, the discrimination suffered by a young employee under the defined benefit plan was balanced by the more favorable treatment received as an older employee, and things could be said to average out. But now employee mobility and early vesting undermine this balancing equation.

ERISA's effect on valuation methods is still in large part uncertain. The controlling part of ERISA appears to be section 3(31) which provides a non-exhaustive list of "acceptable" actuarial cost methods and explicitly forbids terminal funding and pay-as-you-go cost methods. That section concludes with the statement that "the Secretary of the Treasury shall issue regulations to further define acceptable actuarial cost methods," and these regulations are not yet available. One certain effect, so far, is the perpetuation, in the law, of the confusing pension terminology of old, including, as I have already remarked, the "frozen initial liability cost method." Still, however bad or good the nomenclature, the sanction of certain appellations through the statute and the regulations might at least promote a certain standardization of terms.

One would expect, from ERISA, a greater disclosure of formulas: when words fail us as a means of describing a method with definiteness, formulas, with all their mathematical exactness, can fill the breach. ERISA should likewise compel a greater disclosure of assumptions. One important effect of ERISA will be to hamper changes in actuarial cost methods, because both section 302(c)(5) of ERISA and new section 412(c)(5) of the Internal Revenue Code require that IRS permission be secured to change methods, whereas the regulations in effect before ERISA, IRC Regs. Sec. 1.404(a)-3(c), indicated that, to the extent proper, different methods could be used from year to year, without the necessity of securing the express consent of IRS.

A lady once called the fire department to tell the answering fireman that her house was on fire. The fireman asked, "How do I get there?" And the lady reportedly answered, "Don't you still have your big red truck?" Of actuaries it might be said that they still have their formulas and their computers, but before they can put out all the fires lighted through ERISA, they'll need to await more complete directions.

MR. DAVID DANIELS: Those of us who have been faced with the prospect of explaining the concept of actuarial cost methods which can be defined fairly simply in our minds but tend to be incredibly detailed as we go through, will find Mr. Paquin's paper a quick, concise approach. As he mentioned, the paper traces an employee through various cost methods with a numerical example. The paper states that its minimal objective is only helping one actuary demonstrate the cost methods, and I think in that regard it should easily meet that objective and certainly far exceed them. I would comment that, while the notation is in footnotes, it needs a little more explanation. I think the paper is valuable internally in the actuarial profession in giving an overview, and is actually the beginning of a text on explaining the further involvement of actuarial cost methods. Because only one individual is dealt with, there are limitations that arise as you enter

into the complexities of the cost method applied to a group of employees. As a quick example - as an employee approaches retirement age, you find that where there is a supplemental liability being amortized, the period extends beyond his retirement. This concept may be somewhat alien when you begin paying the man benefits and you are amortizing these benefits at the same time. Naturally that gets clouded as you get into aggregate systems. However, as I said, I think that it meets its minimum objective easily for which we owe our thanks to Mr. Paquin.

MR. CHARLES L. WALLS: I believe that there is no logical distinction between accrued benefit and projection valuation methods, and that any such distinction is misleading and has no place in actuarial literature.

MR. DANIELS: Concerning these funding methods, once we explain to the client what method we are using and how we are funding the program of benefits, the logical questions that are going to arise are: How am I doing? - How is the fund doing? - How is the valuation of my liabilities doing as compared with the assets? There have been three tests generally that have been applied, all dealing with past service liability. These include the liability for accrued benefits, i.e., benefits earned to date; the liability for vested benefits; and the liability that arises upon termination of the plan.

In addition to the client asking these out of selfmotivation, he will also be motivated from outside agencies - the accountant wants to know under Opinion 8, now under the FASB, what the liability for vested benefits is; the SEC wants to know on Form 10K what the unfunded past service liability is; and, of course, the IRS always asks what the amount of unfunded past service was and how you are progressing under the funding program. The IRS was asking in order that deductions can stop in case you had amortized the past service liability. In the past there has been some confusion arising if you had an aggregate cost method, that is, one of the methods without supplemental liability. It would appear that you were overfunded - you had no past service liability. This provoked or was clarified in Revenue Ruling 69-255, which now has been codified and found its way into the full funding limitation in ERISA. In addition to whatever method you are using, there is the full funding limitation which tells you and the IRS how you are doing overall. On Form 5500, it is interesting that, with the accrued liability that is asked for, and the assets that are asked for, there is a note that the accrued liability can be omitted if you are on the aggregate cost method. If you are on the frozen initial liability method you can enter "N/A"; which I suppose is not applicable and not available.

As for the accountants, when they were drafting and reviewing APB8, they were initially interested in this status of funding question and there was some discussion as to whether the past service liability should be disclosed. You will note that people brought out that if we disclose it on the cost method then we can have a tremendously different comparison between two companies. One company using the entry age normal method with a large unfunded past service liability, which is really there to obtain the flexibility of funding, will show a large figure, whereas

a company in the same situation using an aggregate method will show zero. There was no real test under that definition. They settled on the present value of the vested benefits; a special definition of it being the sum of each employee's individual benefits if he terminated on the valuation date.

The other group that I mentioned - the SEC under Form 10K still asks for the unfunded past service liability but, in my experience and in discussions, I find that this is not consistently answered. The client or the company that is on an aggregate cost method delights in stating that there is no unfunded past service liability and that they have met all of their obligations. The other company with the entry age normal method and the large liability looming on that footnote may choose to show the liability for accrued benefits - a substantially different figure.

The other item was the liability upon plan termination. This now is an item that is going to have to be determined for ERISA in order that you can determine the allocation by priorities: in other words, the voluntary contributions; the mandatory contributions; the present value of benefits to people in pay status with certain limitations; and on through.

All three of these different concepts and the Academy of Actuaries opinion on them were found in the exposure draft that came out last spring. This then gives some comparison of the different answers to the question, "How am I doing as far as filling out the forms?". There is also the figure which is important, the present value of accrued benefits, and in that draft the committee discussed the various actuarial assumptions and considerations which should be given whether or not in a final pay plan you include salary increases.

MR. STEMPEL: I would like to make one comment that concerns me about the effect of ERISA on valuation methods - the nature of the employee data that perhaps we have used somewhat glibly in the past. It appears that, basically, the methods listed in the law and in the Academy draft seem to be congruent, subject to the fact that the IRS can limit the methods, hopefully sometime after they have given us some clear definitions of what they are. But, as far as the data is concerned, I am concerned about the extent to which the actuary has to be involved with the certification of data that he receives from the plan's sponsor. Ordinarily, with salary plans - final salary plans - we have customarily used only the current salary in the valuation and for the purpose of calculating the value of vested benefits, or for the accrued benefit we have applied our salary scale in reverse. I am concerned as to the extent to which actuaries will have to be involved in getting better data and keeping it with respect to past salary history. This is especially important with respect to multi employer plans. Very often the past service benefits of participants are not finally determined until employment is terminated, or perhaps months later through the use of social security records. In any event, the use of the actuarial methods culminate in the report that we have to make and the funding standard account.

MR. TOM SLOAN: The section of minimum funding standards is the

area of ERISA where the actuary has primary responsibility. ERISA sets up minimum funding standards that are more demanding than previous standards and then hands responsibility for quantifying these standards to the actuary. Furthermore, the actuary's responsibility extends not just to his technical competence but to his professional standards as well. To have his responsibility so explicitly outlined is something new and surprising to the pension actuary. The discussions at previous Society meetings show that actuaries are both intrigued and disturbed by this new responsibility. The subject was part of several discussions at the Cincinnati meeting, and the issue of the Record covering that meeting makes very interesting reading, particularly the section on "Funding Requirements under ERISA".

The Funding Standard Account (FSA) is both the measure of the funding requirements for the plan as set by the actuary and the measure of funding progress for the plan as provided by the plan sponsor. A statement of the development of the FSA is required to be reported each year by the plan administrator, and this report becomes public information. Interested parties will be able to learn the basis for determining the minimum funding requirements and to observe how well they have been met. In addition, the pattern and amounts of reported actuarial gains and losses will provide a general indication of the relationship of emerging experience in the actuarial assumptions.

Since the FSA does not become effective until January 1, 1976, at least for plans in existence on January 1, 1974, almost no one has yet had any practical experience with it. Furthermore, except for Schedule B of the proposed Form 5500, very little information has been published to date by the IRS or the Labor Department with respect to minimum funding requirements. And, since the section on funding, Part 3 of Title I, contains 18 references to regulations or rights of approval, waiver, extension, or determination by the Secretary of the Treasury or the Secretary of Labor, and since each of the definitions in ERISA Section 3 of "normal cost", "accrued liability", "unfunded accrued liability", "actuarial cost method", "current value", and "present value" refers to regulations, it is evident that the minimum funding requirements are going to be significantly affected by whatever comes out of Washington. But we need to anticipate and prepare for the operations of the FSA before regulations are issued.

The structure of the FSA is relatively simple; it consists of a number of charges and credits. If the net sum of these items for a plan year produces a debit balance, that amount is defined as the "accumulated funding deficiency" and indicates that the minimum funding standard has not been met. Unless the deficiency is corrected timely, the employer is subject to certain penalty taxes. If the net sum of the charges and credits produces a credit balance, then the minimum funding standard has been met for that plan year. Furthermore, the credit balance is carried forward to the next year and applied to the charges arising in that year. For a qualified plan, the contribution required to meet the minimum funding standard is deductible, but contributions above that amount are subject to limitation.

It's convenient to classify the charges and credits to the FSA into three categories: actuarially determined items; contributions; and special adjustments on account of any waived funding deficiency, full funding limitation, or special Alternative Minimum Funding Standard Account (ASA) credit. Interest on these items is also included. The actuary is, of course, primarily concerned with the actuarially determined items. The determination of the contributions will probably not present any special problems for the actuary, and, although the special adjustments with respect to the full funding limitation and the special ASA credit are presented as accounting items, they involve determinations that will be discussed later.

The actuarially determined items are the normal cost and the annual amounts required to amortize, over prescribed time periods, the unfunded accrued liability as of the effective date of the FSA, each subsequent net increase or decrease in accrued liability on account of plan amendments or actuarial assumptions, and each net actuarial gain or loss. Each of these items is directly related to the actuary's choice of actuarial cost method and actuarial assumptions. Consequently, it is important to review how the choice of actuarial assumptions and actuarial cost method can affect the actuarially determined items entering into the FSA.

The choice of actuarial assumptions, of course, directly affects the pension costs for the plan and thereby the amounts of normal cost and unfunded liability entering into the FSA. The choice of actuarial assumptions also affects the size and incidence of actuarial gains and losses entering into the FSA. When an actuarial assumption turns out not to be "realistic" or when initially offsetting actuarial assumptions no longer offset, the resulting actuarial gains and losses will have to be adjusted for in the FSA. Since actuarial assumptions will be set to reflect long-range anticipated experience and since it is reasonable to provide for adverse experience deviations in the assumptions, actuarial gains and losses may fluctuate substantially from year to year. The pattern and amount of actuarial gains and losses appear to provide a measure of how "reasonable" was the choice of actuarial assumptions and how good was the actuary's "best estimate," but the long-range nature of actuarial assumptions and the degree of conservatism in them must also be taken into account in the measure. Emerging experience has always affected pension costs, but one effect of the FSA will be to provide a record of the amounts and incidence of experience gains and losses and their effect on pension costs.

Another feature of the FSA involved with actuarial assumptions is that any increase or decrease in accrued liability on account of a change in actuarial assumptions is amortized over 30 years in arriving at the minimum contribution requirement whereas actuarial gains and losses are amortized over 15 years. The effect on the minimum funding requirement of this difference in amortization requirements is another item to take into account whenever a change in actuarial assumptions is being considered.

The definition of "actuarial cost method" in Title I lists as acceptable actuarial cost methods (subject to further definition

under regulations to be issued) the unit credit method, entry age normal cost method, individual level premium method, aggregate cost method, attained age normal cost method, and frozen initial liability method. The choice of actuarial cost method determines how normal cost and accrued liabilities are defined and how actuarial gains and losses are taken into account in the FSA. It affects whether the ASA can ever apply, and it may also affect the definition of the full funding limitation.

Under the unit credit and entry age normal actuarial cost methods, normal cost, accrued liabilities, and unfunded accrued liabilities are individually defined, and actuarial gains and losses are explicitly calculated. Thus, under these methods each of the actuarially determined items in the FSA is directly available from the valuation results. Under other actuarial cost methods, one or more items may not be explicitly defined. Under a common definition of the aggregate cost method, for example, gains and losses are not separately identified but are spread over future normal costs, and the unfunded liability is zero. The variations in pension costs by actuarial cost method are generally well known to pension actuaries, but the amortization requirements of the FSA provide a new variable in analyzing the effect of actuarial cost methods on the minimum funding standard.

For example, the effect of the adjustment for actuarial gains and losses depends on a comparison of the 15-year amortization requirement in the situation where gains and losses are explicitly calculated with the amortization over the annuity value representing the future working lifetime of the group in the situation where gains and losses are spread.

The choice of actuarial cost method also affects the amount of the full funding limitation applicable to a plan and, accordingly, whether any full funding limitation special adjustment is made to the FSA. The full funding limitation is the excess, if any, of the accrued liability for the plan over the lesser of the fair market value or actuarial value of plan assets. The accrued liability to be used is the amount under the actuarial cost method for the plan or the amount under the entry age normal cost method if the accrued liability cannot be directly calculated under the actuarial cost method used. We need regulations to understand this better since, in theory, an accrued liability can be defined under any acceptable actuarial cost method.

The full funding limitation adjustment is a credit to the FSA in an amount that reduces the required contribution for the year to an amount such that the pension assets after contributions do not exceed the accrued liability. In addition, all amounts being amortized are considered fully amortized.

Use of the ASA is available only to plans that use an actuarial cost method that requires contributions not less than those required under the entry age normal cost method. This presumably means that actuarial items entering into the FSA have been determined on the entry age normal cost method, even though lesser contributions may have been made because of the lesser requirements of the ASA. The choice of an actuarial cost method with lower pension costs

than the entry age normal method thus precludes use of the ASA.

The ASA needs to be defined only for those plan years in which it is used. It is described as a continuing account, in the same way as the FSA, but in operation previous credit balances are ignored; an uncorrected debit balance is carried forward, however. The FSA must continue to be maintained for any years in which the ASA is used as the minimum funding standard. The minimum contribution required under the ASA is the sum of the normal cost determined on the unit credit method (or the normal cost on the plan's actuarial cost method, if less), plus the excess, if any, of the present value of accrued benefits, computed on a plan termination valuation basis, over the plan assets at market value. The special ASA credit to the FSA comes about in any year in which the minimum funding standard is switched to the FSA from the ASA. The special credit is the difference between the debit balances of the two accounts. In effect, FSA is put in the position it would have been in if contributions had been sufficient to meet its minimum funding requirements rather than those of the ASA, less any deficiency under the ASA. This special credit has to be charged off over five years, however.

For multiemployer plans, there are longer amortization periods for certain items in the FSA to recognize the expected greater stability of these plans. But since contributions to negotiated multiemployer plans are generally related to hours worked or some other similar index, there is the possibility of a funding deficiency when the actual contributions for a period are less than the assumed contributions. Language in the Conference Committee Report indicates that such a shortfall would be considered an actuarial loss to be made up in future negotiated contributions, but any such procedure needs to be spelled out in regulations. The special problems of multiemployer plans were discussed in detail at the Cincinnati meeting.

ERISA requires an actuarial valuation at least once every three years. If an annual valuation is not performed, the applicable normal cost for the plan year still needs to be determined. This might be done by the use of several approximation techniques, but the enrolled actuary needs to be satisfied that the technique is "reasonable" by ERISA standards. Although a valuation may be done as of any date during the plan year, in order to provide the greatest amount of time to determine the minimum contribution for the year and thus to avoid any accidental funding deficiency, it seems advisable to use a date as early in the plan year as possible.

Much of the description in ERISA of the operation of the FSA is less than crystal clear, and one of the most important features of the regulations must be simply to provide an explanation of what certain features mean. In addition, as people become more familiar with its operation, the need for certain changes in the FSA will become evident. Two changes have already been seriously proposed--to increase the amortization period of the special ASA credit from 5 to 30 years and to include as an additional item to be amortized any change in the accrued liability on account of an actuarial cost method change. The first change has been proposed to reduce the rather substantial cost of moving from the ASA, and

the second has been proposed to correct what might have been an oversight although, since any change in actuarial cost method requires approval, such an amortization could have been a condition of approval.

Whatever else might be said about the FSA, learning to live with it is going to be a challenging, fascinating, and exasperating experience.

MR. STEMPEL: Mr. Sloan referred to the problems of multiemployer plans which was also discussed by Jack Elkin at the Cincinnati meeting of the Society. It does concern me that a "shortfall" in contributions could throw a multiemployer plan into an accumulated funding deficiency by the end of the plan year. For example, even for a plan that was determined to be on an actuarially sound basis, if the assumption of contributions for 1500 hours a year per man was not met and workers averaged 1200 hours per year, the strict working of the account could very easily produce a funding deficiency by the end of the year. Basically, the law does provide that during the term of a bargaining agreement no funding deficiency will be assessed. But, for example, if the plan year ends with the calendar year and the bargaining period happens to end about the same time or as of January 31, it is quite likely that the bargaining could be settled in the absence of knowledge as to the extent of the funding deficiency. Now the conference report has some vague wording as to what period of time you would have to make this up. It states that it will be made up during the next bargaining period either through additional contributions or reduction in benefits. Of course, a reduction in benefits is a serious thing to have to bring to your board of trustees.

MR. ALEXANDER SUSSMAN: In talking to the counsel of the labor committee, that problem was raised. They indicated that they would be very willing to listen to everything that had a bearing on this situation; however, scheduled benefits to be increased during the period of waiver might not be approved. So you have an avenue, but it has its drawbacks.

MR. STEMPEL: Yes, it does seem to me that, of course, there are various avenues open to a multiemployer plan, but some of them, like the one that you mentioned or the waiver, do provide some inhibitions on the ability of the plan to make subsequent amendments. I think it would be important to see what the regulations would provide in the event of a waiver and how the deficiency could be paid off before the amortization provided by the funding standard account so that successive additional contribution increases could be again used to improve benefits.

MR. IAN HOLDEN: One of the essential differences between Canadian legislation and ERISA is that of jurisdiction. In Canada, the provincial jurisdiction in employment matters has been respected, and we thus have 5 separate acts with the prospect eventually of 11. The question of uniformity of legislation is thus of prime concern in Canada, and while the acts themselves are substantially similar, there still exist administrative and interpretive differences.

The minimum funding standards that apply in Canada are well-known to many of you. They can be summarized in three rules - the current service cost must be determined by an actuary, certified in his report, and paid annually. The actuary is not subject to any restrictions on funding methods but must certify in his report that, in his opinion, the assumptions and methods chosen are appropriate and consistent with current actuarial practice. The assumptions that are used are reviewed by the various pension authorities. Experience Deficiencies determined by the actuary in his triennial review must be amortized by level annual installments over 5 years. Experience Deficiencies are defined as any actuarial deficit that arises from other than the failure to pay premiums as required and the existence of an Initial Unfunded Liability. The Initial Unfunded Liability must be amortized by level annual installments over 15 years. Adherence to these minimum funding standards is supervised by having the plan sponsor file an annual return. The various legislative authorities review this adherence to the minimum funding standards on a year-to-year basis through the certificate the actuary has filed in his regular report. Failure to adhere to the minimum funding program established by the actuary will incur some penalties but not necessarily require any actuarial involvement until the next annual review.

Another development of interest, and flowing from the provincial jurisdiction of pension plan legislation, was the formation of the Canadian Association of Pension Supervisory Authorities, known as CAPSA, comprised of the representatives of the federal and provincial governments that administer similar legislation on private pension plans. The aims of this organization are several, but I think might be summarized as the promotion of uniformity and the betterment of pension legislation.

Their first meeting was held in June of this year and briefs were submitted by a wide variety of organizations. The meeting was well attended and covered a broad range of suggested improvements in legislation. Perhaps the most commonly expressed view was that uniformity of legislation and administration was of utmost importance. The problems of lack of uniformity for multi provincial employers are obvious.

The question that received very broad attention, was an almost universal (to stretch the point a bit) plea for relaxation of these minimum funding standards. The most commonly suggested approach was the removal of the distinction between Experience Deficiencies, which as mentioned are required to be made up within 5 years, and Initial Unfunded Liabilities, which can be amortized over 15 years, thus allowing <u>all</u> actuarial deficits to be made up over 15 years. The very short funding period currently allowed for Experience Deficiencies, combined with currently depressed market values and inflation, is exerting great financial pressure on plan sponsors, and actively discouraging the formation of final-pay plans.

The Canadian Institute of Actuaries proposed that in the administration of the acts it be recognized that the actuary's regular report satisfies two purposes: firstly, to indicate the solvency position on a wind-up basis; and, secondly, to establish an adequate

funding program on an on-going basis. For the first purpose, strict tests and standards would apply, but for the second purpose, greater actuarial freedom would be allowed. Based on this dual approach, the minimum required contribution would be the greater of the amount required to maintain solvency to the next valuation and the amount required for adequacy.

There has been no concrete feedback from this Conference as yet. There is some reason to believe, however, that we may expect some relief from the current strict minimum funding standards. Indeed, as a final comment, the Ontario Pension Commission has, within the last month, granted some relief to one of the dilemmas facing the actuary by removing the requirement that indexed pensions after retirement must be prefunded. The indexed portion of these pensions may now be paid for, in whole or in part, on a pay-as-you-go basis, provided that the actuary reports the extent to which this basis is used, and that any pay-as-you-go costs are treated as current service costs for the purposes of the Act.

It is understood that, in a somewhat parallel move, the Department of National Revenue will soon announce new Regulations which will remove the previous prohibitions on funding programs which reflect inflationary salary increases and also on the prefunding of indexed pensions for tax relief purposes. New limits will apply, of course. For example, it is expected that for projecting salaries under final average plans the rate of salary increase may not be less than 1% below the valuation interest rate.

MR. DANIELS: ERISA has added section 412(c)(2) to the Internal Revenue Code which states that the value of the plan's assets shall be determined by any reasonable actuarial method which takes into account fair market value and which is permitted under regulations prescribed by the Secretary of the Treasury. It is conjecture at this point as to what the regulations prescribed by the Secretary of the Treasury will be. One item to consider in selecting an actuarial method for a client is the fact that this will have an impact on the balance sheet. The assets will be a subtractive item from the liabilities. The change in the assets is dampened either over fifteen years or thirty years as it is amortized. Thus a sizeable loss in the market value may not be an immediate cost increase. Offsetting that argument is the fact that the numbers, no matter how proportionally smaller they are, can still of their own be sizeable.

New emphasis is now placed on the phrase "actuarial method of valuing assets." This is not just a measure of the assets as the fair market value as set forth by the trustee on a particular given date. It is now starting with their valuation assets and arriving at another figure. Emphasis has also been placed on perhaps not starting with the assets received from the trustee but looking at those and perhaps analyzing the appropriateness of the values placed on some of them. This begins to get beyond some of our more traditional ways of valuing assets.

There are several objectives in determining which actuarial method you are going to use and the reasons for picking an actuarial method as opposed to taking the full market value. The

first is to bear in mind the long-range nature of plan costs. We are not dealing with cost on a given date but rather the long-range 40 to 50 year projection. The second objective may be to lessen the fluctuations in costs or to dampen those but also to recognize any inherent growth or loss in the assets. The third objective would be to try and conform the asset valuation with the interest assumption so that there is some reasonable tie-in between the liability side and the asset side.

One of the secondary objectives that should be kept in mind in developing a method is first an ease of understanding of the method. The method that is used for determining the assets should also be independent of the investor's action. I do not believe that the method should be developed to force a realization of assets merely to meet a particular cost or a particular objective.

Each of these actuarial methods has to meet certain tests. They are often like the economist's models which are developed to explain why the economy has performed as it has and they essentially are the creation of a formula which when applied to the past will produce appropriate results. The stock market performance in the last several years has caused several of the prior actuarial methods to be modified and tampered with in order to take into account or to ignore, in certain cases, some of the wider fluctuations. The existing methods are almost a permutation of the combination of the various factors that are involved. The first factor is book value which used to be the actuarial value of assets but which tended to overstate costs in the long run. Second is the market value. Third is to determine the time interval over which you want to study. Fourth is the investment return assumed. Fifth is the treatment of the realized gains.

The methods have all been well documented and written elsewhere. They fall into several categories. One is the asset write-up method in which a starting value of assets, perhaps book value or some average of book value and market value, is written up by the inspected yield and then tested against certain percentages of the fair market value, that is, whether the resulting value falls within 90 to 110% of the fair market value. Other methods include moving average market methods which average the difference in unrealized depreciation and the difference between market value and book value over a period of five years and add it to the current book value. Recognition is made in this method of the subsequent capital gains or losses so that the average does not include a large unrealized depreciation from the first year when it has subsequently been realized and is now in the book or starting value. There are methods which average the ratio of market value to book value.

Some of the refinements that are used with these methods are to eliminate or dampen the extreme values that happened in the recent past by averaging the actual holdings in terms of a final holding. In other words, a determination is made of the current portfolio and, rather than average the prior portfolio, the average values of what the current portfolio would have been over the

past five years is used. An inherent problem there is facing a downturn in the market value. The investor might decide to buy or sell in order to pick up the value that had a good past track record.

The method that is used should take into account the fair market value and many of the above do without doing it directly. As the regulations have yet to be written, the IRS is still open for comment, and I am aware of the fact that several groups are still submitting reasons why continuation of their current method ought to be included.

MR. SLOAN: The valuation of pension fund assets held under insurance contracts has not been a particularly important subject in the past. Under the stimulation of ERISA's "reasonableness" requirement, however, this area will be reviewed by actuaries along with the other actuarial procedures used to determine pension costs. Accountants also will probably want to review their procedures because of their new reporting responsibilities in providing an audit of the plan's financial condition.

The funds held under group pension contracts can be classified into allocated and unallocated funds. Allocated funds are funds contractually related to individual participants under a plan: individual policy funds; the funds for purchased benefits under group deferred annuity contracts; and the funds for guaranteed retired life benefits under the various kinds of deposit administration and IPG contracts. Unallocated funds are the funds not related to individual participants, although they may have interest or purchase rate guarantees attached. The unallocated funds may be held in either the insurance company's separate accounts or its general account. Allocated funds are generally not returnable to the plan sponsor except as actuarial gains; unallocated funds may be returnable under certain conditions, sometimes with penalty.

The accounting and valuation procedures that insurance companies have set up for insured pension funds are designed to carry out the contractual relationship between the plan sponsor and the insurance company. The contractually defined fund operations in group deposit administration contracts, for example, are intended to implement the contract's interest rate and purchase rate guarantees and not represent real flows of money. Furthermore, the liabilities that insurance companies set up in their annual statements with respect to their contracts are based on insurance law requirements and not on pension funding considerations. Thus, the information provided by the insurance company may not be directly applicable to the audit of a pension fund or the determination of pension costs, but it's where the accountant and actuary have to start.

The pension actuary needs to relate whatever procedure he sets up to the other actuarial procedures used in determining pension costs. For plans that include both allocated and unallocated funds or both insured and noninsured funds, a common procedure used by actuaries has been not to include the pension benefits related to allocated funds in the valuation of the plan's

liabilities and, accordingly, not to include the allocated funds in the plan's assets--in effect to value both at zero. A procedure with equivalent results on pension costs is to include the pension benefits related to allocated funds in the plan's liabilities, valued on the plan's actuarial basis, and then to include this calculated liability value in the assets. The effect of these procedures is to defer recognition of actuarial gains and losses from allocated funds in pension costs until they emerge as experience refunds or otherwise.

For unallocated funds it is a common and convenient procedure to use the contractual value. For funds held at market value--separate account funds--the contractual value can be included with other market value assets and adjusted along with them to the actuarial asset value. For unallocated funds in the general account, the contractual value is, in effect, a book value, and its use is consistent with the use of book values for fixed income assets.

Another approach has been to use the insurance company's experience fund or internal fund for the plan as the plan asset and to value the pension benefits to be provided under the insurance contract on the actuarial basis used for all other plan benefits. The effect of this approach is to recognize actuarial gains and losses in pension costs before they emerge contractually.

The recently published proposed Form 5500 gives important input to the valuation of insured pension funds. An instruction to item 15, the accountant's statement of assets and liabilities, says that only unallocated funds held under group annuity contracts are to be included as assets. Furthermore, Schedule A of the form indicates that unallocated group pension funds, other than separate account funds, are to be determined as the net balance of various additions and deductions, essentially a "contractual value" determination. Separate account funds are to be shown separately, presumably at the contractual value, which is usually market value.

The accountant's statement of assets thus will exclude the value of allocated insured pension funds completely and include unallocated funds at contractual value. This is a simple and convenient approach which minimizes the information required from insurance companies.

In addition, the instructions for Schedule B of Form 5500, the statement of actuarial information, indicates that the entries for "accrued liabilities" and "value of assets as determined for funding standard account" may exclude liabilities fully funded under insurance contracts other than unallocated amounts. Although regulations will be needed to define in detail the items in the funding standard account, from these instructions it appears to follow that all the data in the funding standard account may exclude amounts related to the allocated funds under insurance contracts, in which case the determination of the minimum contribution required would be only with respect to unallocated funds, and the "reasonableness" requirements of ERISA would apply only to unallocated funds.

It thus appears that the approaches now being used by actuaries with respect to insured pension funds can continue to be used. But at the time that the actuarial procedures for a plan are reviewed for appropriateness under ERISA, the asset valuation basis of insured pension funds should not be overlooked if a change might provide greater flexibility in funding.

MR. HOLDEN: In January of this year, the Ontario (and, so far, only the Ontario) Pension Commission promulgated a set of guidelines dealing with the valuation of assets for purposes of actuarial valuations. A lively debate has, quite predictably ensued. The Commission has apparently felt the need for some internal working rules for their administrative staff to use in reviewing pension plans. Indeed, in setting out their rules, they state:

> "Without attempting to dictate the asset valuation method to be used by the actuary, the Pension Commission is now using the following tests to determine the maximum acceptable value to be placed on assets in valuation reports."

They go on to outline 4 methods of determining asset values which can be summarized as follows:

1) the use of market value, pure and simple, of each security - assuming that the actuarial liabilities have been valued conservatively,

2) the use of cost or amortized values for bonds, outstanding balances for mortgages, and, for equities, a value which can reflect appreciation and depreciation provided that, in the aggregate, such values do not exceed market value,

3) the use of equity values as in 2) above with fixed-income securities valued by discounting cash flow using an interest rate not less than the valuation interest rate, and

4) all assets valued at cost adjusted by a 3-year moving average of appreciation or depreciation.

If asset values do not exceed the largest of the values determined by the above 4 methods, they will be found acceptable. If an actuary's asset value does exceed the largest value, the actuary's report will be returned to him "for further consideration." I understand that this has indeed happened on several occasions to date, but I regret that I cannot add the final chapters (and there may be several) to this particular story.

The Ontario Pension Commission has made it quite clear that the aim of their legislation is to promote adequate funding on a "going concern" basis. The emphasis on market values that we see in this set of rules seems to be inconsistent with this concept, in that it superimposes on a long-term assessment of plan liabilities a very short-term assessment of fund assets. It is also inconsistent with the statements in the guidelines that:

> "the two sides of the balance sheet are not independent,"
>
> and later that
>
> "the maximum value to be placed on the assets may therefore depend on the basis of valuing the liabilities. With a normally conservative actuarial basis for valuing benefits, market value of assets should be satisfactory."

It seems we are, in effect, being asked to value assets independently of liabilities nevertheless.

If the prime purpose to be served by the legislation was to test for solvency on a wind-up basis, then the emphasis on market value might be more appropriate. It has been pointed out, however, that even on a termination of plan, immediate liquidation of assets is seldom, if ever, required, so that even here, heavy emphasis on market value has been questioned.

And finally, our enthusiasm for these rules is much tempered by the fact that, notwithstanding the statements that the Commission relies on the actuary's certificate and that they are not attempting to dictate the asset valuation method, the practical impact of these guidelines is to remove some of the actuary's freedom.

For fear of being thought too harsh a critic, although the views expressed are what I perceive to be the majority view, it is conceded that some internal procedural guides were needed by the Commission's staff, and it is hoped that these guidelines are merely the first step toward a more satisfactory approach to the problem.

The Canadian Institute is currently preparing a set of guidelines for the members of the actuarial profession describing acceptable principles and practices in the valuation of pension plan assets. It is hoped that, based on these guidelines, an acceptable solution will be found, and indeed we have reason to believe that the Pension Commission will be receptive to such an approach.

MR. STEMPEL: I will now call upon Joe Lynch to present his paper "A Practical Approach to Gains Analysis."

MR. JOSIAH LYNCH: The pension actuary's interest in gains analysis has been heightened by the new requirements of the Employee Retirement Income Security Act of 1974 (ERISA). Not only must the experience gain or loss of a pension plan be reported (unless an aggregate cost method is used), but the enrolled actuary must certify that in his opinion the valuation assumptions: (i) are in the aggregate reasonably related to the experience of the plan and to reasonable expectations; and (ii) represent his best estimate of anticipated experience under the plan. It is now more important than ever for him to evaluate and understand the effect on the plan experience of the actuarial assumptions, and, by implication, of each assumption.

The pension actuary has always been on unsure ground in attempting to identify experience gains (and losses) in a pension plan by source. His approach has usually been more intuitive than scientific. The purpose of this paper is to describe a method for allocating gains into sources that is both actuarially acceptable and mathematically definitive.

The paper describes a general approach to gains determination that is not only mathematically correct, but practical as well. The approach is essentially automatic, and can be used for any pension plan, regardless of complexity or funding method.

I am going to begin by describing the technique as it would apply to a plan funded on an individual cost method, such as entry age normal or unit credit.

Throughout this paper, the period over which experience is measured is assumed to be one year, from time 0 to time 1. The theory can readily be extended to cover periods other than one year. In fact, the computer program developed by the author to implement the approach was designed to operate over any interval.

The effects of change in assumptions or funding method are not covered in this paper. They can be isolated by performing an additional valuation on the new basis after the approach described herein has been applied on the old basis.

There is no mystery about the gain itself as it is defined by IRS. Essentially it is the change in the unfunded liability from the beginning of the year to the end of the year and it is defined by formula (1) of the paper. As mentioned before, the period over which experience is measured is assumed to be one year. The period over which a gain or loss is calculated may be other than one year.

I have attempted to show that the total gain based on a traditional definition of total gain can be visualized as the sum of three pieces which are shown in formulas (6), (7), and (8) of the paper. The first piece is the customary view of the gain or loss from the investment yield assumption. The gain or loss from the interest assumption would be the actual asset value as of the end of the year less the "expected" asset value which is defined as the asset value at the beginning of the year plus one year's interest at the valuation assumed rate of interest plus contributions with interest on the contributions at the assumed rate less benefits and expenses together with interest on those to the end of the period at the assumed rate.

The second piece is the gain or loss from expenses. This would be the value of the "expected" expenses at the beginning of the year multiplied by $(1 + i)$ to the end of the year less the actual expenses taken from the fund with interest at the assumed rate to the end of the year.

The third piece can be demonstrated algebraically. (The sum of the three pieces will total to the traditional definition of the total gain.) The third piece on the individual cost approach is

the change in the liabilities, defined as the accrued liability at the beginning of the year plus the normal cost for the year with interest to the end of the valuation period less the accrued liability at the end of the period. Next, subtract the actual benefits together with interest at the assumed rate to the end of the period. It is a very important mathematical point that these three pieces add up to the total gain.

The gain or loss on the investment yield assumption can be computed directly from the trustee's report on the assets before or after the valuation is completed. The gain or loss on the expense assumption can also be computed directly from the trustee's report before or after the valuation is completed. Those two pieces are independent of the actuarial valuation. The last item of the third piece can also be calculated directly from the trust information because those are the actual benefits that are paid from the fund together with interest at the assumed rate. The part that is left, the accrued liability at the beginning of the year plus the normal cost at the beginning of the year times $(1 + i)$ less the accrued liability at the end of the year is the only part that is not dependent on the trustees report. It must be computed independently of the trustee's report and it is strictly a function of the actuarial valuation. The thrust of this paper is how to determine and allocate individually by source the gains and losses to that component.

For plans funded on an aggregate cost method, the deviations from expected experience are usually expressed as changes in the normal cost accrual factor. While the mathematics in that section of the paper are based on the frozen initial liability method, the approach is sufficiently general to apply to any aggregate method. In the traditional definition under an aggregate cost method, "there is no gain." The total gain is defined to be zero. A plan using the aggregate cost method basis will find the gains or losses in the unfunded liability at the end of the year. For these plans it can be seen mathematically and algebraically that the change in the unfunded liability can be broken down into similar components. When using an aggregate approach the concern is not with the dollar amounts that are gained or lost but with the allocation of the changes in the normal cost accrual factor. The paper demonstrates that the change in the normal cost accrual factor from the beginning of the year to the end of the year is the sum of three pieces divided by the present value of salaries at the end of the year. The three pieces are the gain or loss from the investment yield assumption, the gain or loss from the expense assumption, and the gain or loss from the change in present value of benefits for each person less the change in the present value of employee contributions less the product of the change in the present value of future salaries and the normal cost accrual factor at the beginning of the year less actual benefits paid with interest to the end of the year. The change in the present value of future benefits, the change in the present value of future employee contributions, and the change in the present value of salaries are dealt with in individual calculations.

Part three of the paper deals with individual changes in values. If the valua-

tion method is an individual cost method, then the individual value for which the change is being computed would be the change in accrued liability. If the plan is funded on an aggregate basis then the individual calculations described in part three of the paper refer successively to the change in present value of future benefits, the change in present value of future employee contributions, and the change in present value of future salaries.

The essential concept is that a single participant may be in the valuation at the beginning of the year and also at the end of the year, or that the participant may be in at the beginning of the year and exit during the year, or the participant may enter during the year and be there at the end of the year. For participants in the valuation at the beginning of the year, the potential value or expected value by the end of the year is simply that participant's initial value brought forward to the end of the year with interest. The initial value would be a present value of benefits, or a present value of contributions, or a present value of future salaries, or an accrued liability plus normal costs, depending on which funding method is being used. The expected value is referred to in the paper as EV. If the participant is there at the end of the year, then the actual year-end value is referred to as V.

The mathematics described in the paper will apply equally well to calculating all of the decrements. These decrements could be retirement probabilities, disablement probabilities, preretirement mortality, post-retirement mortality, post-disablement mortality, and any other decrements or subdivisions of decrements that are possible.

Section four of the paper is a summary of how to use the rest of the paper.

The approach described in the paper presumes a certain hierarchy of allocations of changes in values by source. The changes in values arising from actual versus expected changes in benefits, for instance, are determined only for participants who do not change status during the year. Participants who exit during the year have their entire releases and any benefit payments or new liabilities allocated to the appropriate decrement, with no recognition given to actual versus expected changes in benefits between time 0 and date of exit.

MR. SLOAN: If a pension plan funded under an individual policy pension trust can be classified as an "insurance contract plan"--that is, it meets the 6 conditions set out in ERISA Section 301(b)--it is exempt from the minimum funding standards and also from the annual actuarial statement. Furthermore, it is subject to a special benefit accrual requirement that relates the benefit accrual to the cash value of the insurance contracts. These special provisions are important because they let an "insurance contract plan" continue to operate pretty much as it has been operating in the past without having to set up a Funding Standard Account and to engage an enrolled actuary.

Until additional regulations are issued, however, it isn't clear exactly which individual policy pension trusts can be classified

as "insurance contract plans." Plans with side funds do not appear to meet the definition since they are not funded exclusively by the purchase of individual insurance contracts. Furthermore, other plans may not qualify because of the requirement that benefits provided by the plan be equal to the benefits provided under each contract at normal retirement age. Some recently-issued contracts provide for a life income basis to be applicable if more favorable than the guaranteed basis. This raises a question whether such a basis conflicts with the equal benefits requirement.

For those individual policy pension trusts subject to the minimum funding standards and actuarial reporting requirements of ERISA, there are some new questions with respect to funding. In the past the actuarial considerations with respect to pension costs for benefits funded solely under individual policies were not required to be separated from the premiums for those policies, and the actuarial cost method and actuarial assumptions for the pension costs were those used to calculate the premium rates. The result was that the investment return assumption was the interest rate used in the premium rates, no turnover was assumed, and no salary increases were assumed even for final pay plans. Revenue Ruling 72-557 said that these assumptions would be considered "reasonable" if the contributions made were the only possible contributions that could be made to fund the plan under the funding vehicle chosen.

For combination funding arrangements, the revenue ruling applied a more general requirement of reasonableness for contributions to the side funds. For that reason, the actuarial assumptions underlying those contributions were usually different from those for premium rates and reflected expected experience more closely. The total plan contributions determined in this way were usually acceptable as deductible amounts so long as dividends and cash value forfeitures were used to reduce future contributions.

Since the instructions to Schedule B of proposed Form 5500 seem to indicate that amounts related to allocated funds under insurance contracts may be excluded from items of the funding standard account, it appears that the precedent of Revenue Ruling 72-557 is being continued. Thus, only the side fund's actuarial assumptions may need revision on account of ERISA's "reasonableness" requirement. If the "reasonableness" requirement were applied to all contributions for the plan, the result would be a complicated relationship between the contributions required under the funding standard account and the premiums required under the insurance contracts, and these complications probably would not increase the actual contributions made.

MR. DANIELS: Prior to ERISA, the merger and transfer of assets of two plans which were involved in a purchase or sale was often the subject of negotiations, which included the value of benefits earned to date and exactly how much was going to be transferred. This had a direct effect on the purchase price of the whole transaction. ERISA states that the rights of an employee subject to a merger or sale can be no less after such sale than they were immediately prior, as if the plan had been terminated on that date.

The termination liability is the one found in the PBGC calculations and this is, in effect, an individual equity question. The liability is computed and compared with the fair market value of the assets on that particular date and this is the amount which then has to be his minimal account thereafter. One question is how long thereafter does this have to continue. If the object is to avoid watering down his interests through a sale, certainly it should not be watered down subsequently. There is some question perhaps as to the fair market value on a particular date. Obviously this could effect the timing of any merger or acquisition. On the other hand the use of the actuarial value of assets may be unrealistic.