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MEASURE OF ACTUARIAL SOUNDNESS IN A PENSION PLAN OF THE RAILROAD RETIREMENT TYPE

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HERMAN BARTIMER:

Essentially the paper is a discussion of possible alternatives of some aspects of the method employed in obtaining the net level cost calculations as presented in the Fifth Actuarial Valuation of the Assets and Liabilities under the Railroad Retirement Acts as of December 31, 1950. It seems to me that these alternatives are based on the following three premises:

1. A pension plan of the Railroad Retirement type may be "actuarially sound" even though there is no intent to amortize the unfunded accrued liability. The magnitude of such liability is not a proper measure of the degree of "actuarial soundness."
2. The concept of "deficit for present members" is a more meaningful index to the layman than the "unfunded accrued liability."
3. As a result of the financial coordination with OASI introduced by the 1951 Amendments to the Railroad Retirement Acts, the social security tax considerations for present employees and future new entrants should be merged with the nonreimbursable benefits (*i.e.*, railroad retirement benefits under the railroad retirement system less reimbursable benefits under the financial interchange with OASI) in obtaining the unfunded accrued liability under the age at entry normal cost method or, preferably, in obtaining the "deficit for present members."

As a former employee with both Railroad Retirement Board and Social Security Administration as well as a former actuarial consultant in union collective bargaining, I should like to present brief comments on each one, not with the thought that I am in any way better qualified than the author but only in the hope that it may stimulate further analysis of the many knotty problems which exist in the highly complex railroad retirement program.

Premise 1.—Where there is no intent to amortize the unfunded accrued liability of a pension plan of the railroad retirement type, the relative magnitude of the unfunded liability takes on increased significance. It is a measure of the weight of past service credit, insufficient contribution rates made in the past, program liberalizations and discrepancies between previous valuation assumptions and actual experience. Furthermore, as the author noted, if the unfunded accrued liability reaches a substantial level, it becomes a measure of broad equity for future new entrants. What rationale can there be when the employee contribution rate exceeds the normal cost?

It is interesting to note the following points in this connection (excluding the effects of the financial interchange with the OASI, except in item *d*):

a) The net level cost as of December 31, 1950 as reported in the Fifth Actuarial Valuation was 13.85% of payroll. The corresponding figure for the normal cost was 7.66%.

b) Interest on the unfunded accrued liability therefore required approximately 6¼% of payroll or 50% of the current contribution rate of 12.5%.

c) Liberalizations of the program and insufficient contribution rates in the past have caused a substantial rise in the total unfunded accrued liability, from $7.4 billion as reported in the Fourth Valuation as of December 31, 1947 to $10.5 billion in the Fifth Valuation as of December 31, 1950.

d) On the basis of the valuation assumptions, the unfunded liabilities are now increasing at a rate in excess of $45 million a year according to the Actuarial Advisory Committee of the Railroad Retirement Board. This amount represents the interest on a deficiency of somewhat more than 0.9% of payroll—*i.e.*, net level rate required 13.41% as against existing contribution rate of 12.5%.

Premise 2.—The author believes that the unfunded accrued liability under the age at entry normal cost method should be reduced by giving credit for future contributions to present employees on the basis of the current tax rate, rather than on the basis of the normal cost rate. He maintains that the resulting "deficit for present members" is a more realistic measure of the excess financial burdens on new entrants.

I fail to understand how the concept will convey a better understanding of the true meaning of the cost figures. It may, on the other hand, merely serve to confuse the layman further. It would seem that the unfunded accrued liability is the appropriate analytical device since it is a realistic measure of the burden on all employees over and above the rate that would have been necessary if the program costs had been funded as service accrued. Furthermore, it explains the *basis* for the contribution rate required. Whether Method I or II on page 28 is employed in determining net level cost as a percent of payroll—*i.e.*, regardless of whether unfunded accrued liability is expressly developed—the required contribution rate is still based on the normal cost plus interest on the unfunded accrued liability.

The author seems more concerned with the tax *deficiencies* than with the actuarial techniques used to determine the required net level contribution rate to support the *benefits of the system*. (Note statement on page 26: "The only thing that really matters is whether the actual rate of contributions is sufficiently close to the actuarially determined cost figures.") Analytically, it is the magnitude of the unfunded accrued liability that remains basically a most fundamental figure in the determination of the required contribution rate, especially in a pension plan of the railroad retirement type where there is no intent to amortize such liability.

However, the concept of "excess for present members" and "deficit for new entrants" has merit in the determination of the effect of the financial interchange with OASI, since the railroad retirement system is in effect providing *tax considerations*, not benefits, for railroad employees in return for the reimbursement benefits provided by OASI.

As for the layman, my experience in collective bargaining for various union groups leads me to believe that the concepts of the normal cost rate and unfunded accrued liability "make sense" to the majority of nontechnicians. The introduction of the contribution rate into the analysis doesn't seem to furnish "a more realistic" measure of excess financial burden on new entrants. A more meaningful measure is the difference between the net level cost to maintain the system and the normal cost rate.

Premise 3.—Under the assumptions involving the financial interchange, a substantial portion of the unfunded accrued liability has been shifted to the social security system. However, the railroad retirement system through future social security taxes on railroad payrolls will be servicing a good part of this liability.

It seems to me that the logical basis for developing the unfunded accrued liability as a result of this interchange should be independent of social security tax considerations for the following reasons:

a) The net level cost analysis of the supplementary nonreimbursable benefit should be concerned with *benefits* only. As the author notes, merging social security tax considerations with nonreimbursable benefits brings a cost item (taxes) into the picture which is independent of the cost of this supplementary benefit.

b) The method brings into focus the immediate substantial gain to the railroad retirement system by recognizing a shift to the OASI of approximately $6 billion out of the original $10.5 billion of unfunded accrued liability. It gives a clearer analytical picture of the effect of the financial interchange, *i.e.*, the railroad retirement system gains considerably on present members but loses rather heavily on new entrants since the net level cost of the reimbursable benefit is based on the normal cost of such benefits plus interest on the $6 billion of unfunded liability which has been shifted to the OASI.

c) Although most unlikely, if the railroad retirement program were discontinued, it is reasonable to assume that the implications of the financial interchange are that the railroad employees would be treated as if they had always been covered under the social security program. In essence, the social security tax would continue regardless of the defunct supplementary retirement program. Therefore, as far as the railroad retirement *system* is concerned there seem to be, as a practical matter, essentially two distinct programs, (1) a supplementary nonreimbursable benefit under the railroad retirement system and (2) social security taxes on railroad payrolls for certain reimbursable benefits from OASI, even though the railroad *employee* is concerned with only a single tax rate for the combined benefits.

d) Social security tax freezes, and revisions in social security tax schedules to keep pace with further benefit liberalizations as well as extensions of social security coverage, make it advisable to divorce social security tax considerations from the approach to the unfunded accrued liability.

e) The adjustments between the two Funds are *internal* transactions, made annually, and do not directly involve the beneficiaries.

f) It seems less confusing analytically to treat the numerous complications of the financial interchange separately. It should be noted that: (1) Actually the railroad retirement system is not financing the cost of the social security benefits which would have been payable to railroad workers on the basis of railroad employment. It merely pays the specified social security tax and gets credit for any additional social security benefits on the basis of the excess of social security benefits based on the combined railroad and social security earnings over those based on social security earnings only. (2) Dual benefits under the employee retirement program are permissible if the individual has coverage under the social security program, but simultaneous benefits from both programs are not permitted under the survivors' program. (3) Individuals who at retirement or death have less than 10 years of railroad service are transferred to the social security system which makes direct payments to the beneficiaries in return for the social security tax on the railroad payrolls. This has resulted in a substantial gain to the railroad retirement system.

DORRANCE C. BRONSON

To one who has been interested in governmental pension plans for a long time, Mr. Niessen's paper on certain aspects of the Railroad Retirement Act is most interesting. The latter part of his paper is not comprehended in its title; it deals with the complex amendments of 1951 which established a "put and take" arrangement—the so-called "financial interchange"—between the OASI trust fund and the RRA trust fund. My first comments are directed to this latter part of his paper.

One might wonder at first why Mr. Niessen brought in under his "measure of soundness" title the subject of this common-law marriage of RRA and OASI. On reflection, however, it seems quite apropos, since the arrangement appears to have improved the position of the RRA by nearly

$\frac{2}{3}$ of a percentage point in payroll cost, which is no trifle. No doubt this aid to RRA has been augmented, since this paper was written, by the very substantial liberalizations of OASI benefits in the 1954 amendments. Unless it is too early to compute this effect, it is to be hoped Mr. Niessen, in his discussion, will put a price tag on this change, as well as on the over-all cost taking both the OASI and the RRA amendments of 1954 into account.

I am especially glad to see, in the financial interchange portion of his paper, an explanation thereof set forth algebraically, and the measurements of its effect viewed from different points of rationale. Mr. Niessen does not state which approach is going to be used by the Board's actuaries, but one might infer that the basis resulting in the lowest unfunded liability is favored, *viz.*, Method IV.

As mentioned earlier, it is gratifying to have now a place to turn to for an algebraic expression of the financial interchange. The author might have warned us, however, that the simplicity of an algebraic device should not connote simplicity in assigning numerical values to the terms of the equations. With the influences of two systems to cope with, the results must be of a second degree order of conjecture. In 1951 the viewpoints of the Social Security actuary and the Board's actuaries were not in agreement on the net cost effect of the financial interchange. It would be interesting to learn whether this difference has since been resolved.

Coming now to the forepart of the paper, the part directly within the promise of the title, I should like to set down some observations. Any science must have its accepted terminology and the more exact the science the more exact the semantics and the clearer the criteria. I have always felt that some accepted term should be available in the pension field to connote that particular funding condition whereunder reserves are on hand (or in prospect by a pretty definite program of amortization) sufficient to stand as security for the existing pension roll and to represent the value of the portion of benefits in respect of service credits accrued to date.

The term "actuarially sound" applied to a pension plan (or to a benefit system generally) has always seemed to me a good term to denote this condition of a plan. Both in a paper to the Society in 1949 and in the Chicago Panel of 1952, I applied this definition and I am still inclined to favor such specific meaning. It was suggested there that taxing power, stability of income source, implied permanence and size of its sponsoring employer, etc., could certainly justify calling a plan financially sound even though it did not meet, or intend to meet, all of the funding attributes I had ascribed to the term "actuarially sound."

Among the plans not measuring up to this definition of "actuarially sound" is the RRA and I should think this would be true by anyone's definition of the term (unless rectified for some by the 1954 amendments). Mr. Niessen must agree, since by the Board's own figures—after taking up the subsidy from OASI and the excess in contributions (employee and employer) of future members—there remains an "actuarial deficit for present members." I do not take this paper to be intended as a conclusive demonstration of the long-term soundness—actuarial or otherwise—of the RRA, but rather a demonstration that the condition is not as bad as it would appear to be by certain common methods of measurement.

In my opinion the RRA or other federal benefit plans do not need to be measured by common methods, to say nothing of meeting my definition of "actuarial soundness." Hence, I agree with the author that all elements may be called into play to reduce the deficit—making a sort of "gross premium" valuation. But it should always be so stated in releasing the figures.

Returning to my definition of "actuarial soundness" in general, many do not agree with it, including some of my own associates. The term "actuarial soundness" is becoming such as to mean "all things to all men." I think the reason for no uniform acceptance of a definition for the term (whether mine or another's) lies in the traditional usage of the term and the opprobrious implications of its obverse. For instance, if in answer to a question—in court, Congress, or the lecture platform—one must say a given plan is not actuarially sound, it is apt to be damned forthwith, whereas actually it may be in acceptable financial condition with all pensioners secure and with considerable active-life equity in addition.

Therefore, it is doubtful whether a generally acceptable definition for, or method of measurement of, "actuarial soundness" will be found. Probably, no great efforts to do so are warranted. After all, who is penalized if a sound plan for *pensioners* is not—using my definition—"actuarially sound" as a whole? It would be the active employees, in that the share of the remaining fund when the plan terminated would not be as great. Assuming this allocation of the fund is done equitably, on the value of accrued pension interests, this may not be deemed a serious fault since pension plans, in general, place the emphasis on pensioners per se, in order—borrowing from the Internal Revenue Service regulations—"to provide systematically for the payment of definitely determinable benefits . . . after retirement."

ELI A. GROSSMAN

This paper suggests certain problems that occur in measuring the soundness of union pension plans. At the start of some union plans there often exist uncertainties concerning the contributions and also unknown liabilities. This makes it difficult to know when these plans are adequately funded and hence it is difficult to measure their soundness.

Although benefits may be absolutely defined in a union plan, contributions often depend on the annual income of the members of the union and these incomes are subject to fluctuation. This naturally means that at best only an estimate of the contribution can be made, based on various judgment factors including trends and economic conditions.

Sometimes a plan states specifically that after, say, 15 years of membership in a local union and attainment of age 65 a member is entitled to a pension. At the start of the plan there may be no records of how many members there are who transferred out of the union to enter a local union in a different area. These members can move back and rejoin for the sake of obtaining the pension. This is an example of a possible unknown liability and if possible should be avoided. There is also the danger of basing an early valuation on only a sample of statistics for the age distribution. Quite frequently one will find that the sample is not random and the liability is much larger than these figures indicate. A conservative approach should be used when only a partial list of ages and service records is available.

Another unknown liability is the future attitude of the courts. The plan usually tells who are eligible for pensions, disability benefits, death benefits, withdrawal benefits, etc., but these may not be worded too strictly. Again, even if they are worded very stringently, supposedly sound plans may turn out to be unsound if the courts should be biased in favor of members claiming benefits for which no provisions have been made.

There usually is a compensating clause in these pension plans which permits benefits to be reduced in case of financial trouble. This is of some help, but it must be remembered that in practice it is very difficult to reduce benefits.

One can readily see that there are many advantages in being conservative in measuring the soundness of a plan. Perhaps, in the case of some unknown liabilities, it would be well to set aside or build up reserves specifically ear-marked for these possible liabilities.

(AUTHOR'S REVIEW OF DISCUSSION)

ABRAHAM M. NIESSEN:

The discussions presented raise some very interesting points and contribute to a better understanding of the topics taken up in the paper. I greatly appreciate each and every one of them.

Mr. Grossman apparently considers the question of how to measure actuarial soundness secondary to the more fundamental question of how to prepare reasonably good cost estimates for the usual type of a union pension plan. The basic difficulty in such cases is the lack of adequate statistics, as well as the uncertainty of future contributions. I fully appreciate this attitude of "first things first." However, to my mind, the development of a plausible and understandable measure of actuarial soundness is important regardless of the limitations of the assumptions on which the valuation is based. Of course, in the case of the railroad retirement plan, we do have a wealth of data that can be relied upon in the formulation of valuation assumptions. To what extent, if any, this makes our assumptions more tenable, I am not prepared to say. The projection of past trends into the future is always a risky business, but it is better to have past trends than not to have them.

Mr. Bronson takes me to task for not indicating in the title the full scope of the paper. The main reason for this omission is that I did not want to make the title too long. Furthermore, the discussion of the financial interchange was introduced only to give the background for extending the notion of "deficit for present members" to a rather unusual situation.

I was glad to see Mr. Bronson's remark that the railroad retirement plan does not have to be measured by common methods. This, together with other remarks, leads me to the conclusion, which I hope is not wishful thinking, that at least with regard to the railroad retirement plan, Mr. Bronson sees some merit in the ideas presented in my paper. What I was trying to do was suggest an "uncommon" approach to the problem of actuarial soundness, and I hope that this approach will be considered as one of the several possibilities.

Mr. Bartimer takes issue with the main thesis of my paper on the grounds that a criterion based on the size of the unfunded accrued liability is the only one which is theoretically defensible. No exception to this rule is granted for the peculiar situation arising from the financial interchange between railroad retirement and OASI. I was aware of most of Mr. Bartimer's criticism at the time I was writing the paper. In fact, I tried to answer it. Apparently, as far as Mr. Bartimer is concerned, I have not succeeded. I shall try, however, to answer some of the more specific points raised in his discussion.

1. It seems to me that the concept of accrued liability has its roots in the unit-purchase method of financing, since only then would such a liability be equivalent to past service obligations. The logic for using the same type of liability figure when it is known not to equal the past service obligations is not quite so clear. The paper contains a demonstration that for a benefit plan of the railroad retirement type, the accrued liability is generally larger than the past service liability. It is difficult to see what purposes are achieved by bringing

in a criterion of "supersoundness" in a situation where even ordinary soundness is practically out of the question.

2. It is important that new entrants not be required to pay more than a specified percentage (under 100) of the cost of their benefits. There is no argument about that. But the treatment accorded new entrants can be analyzed simply on the basis of the calculated normal cost and the actual contributions; no unfunded accrued liability figure is needed for this purpose.
3. It is contended that accrued liability figures should be based on benefit considerations only; cost items affecting the system but not the employees have no place in the picture. Hence, Mr. Bartimer rejects the introduction of social security taxes in the determination of the unfunded accrued liability that remains with the railroad retirement system after considering the effects of the financial interchange with OASI. It would appear that because of that Mr. Bartimer favors Method I which considers benefit transactions with OASI but not tax transactions.

   It seems to me that Method I also brings in considerations which are extraneous to the benefit scheme as it affects the employees alone. Railroad retirement is not a "social security offset," nor a "plus social security" plan. So long as the social security minimum does not apply, the railroad retirement annuity is totally independent of what the social security benefit based on railroad service would have been. Furthermore, the employee may draw a social security benefit based on nonrailroad employment without affecting the amount of his railroad retirement annuity. Thus, the splitting up of railroad retirement annuities into a basic OASI and supplementary railroad retirement part has no meaning as far as the employee himself is concerned. It has meaning for the system, but not for the beneficiaries. Because of that, the OASI benefit items considered in Method I seem no more pertinent to a theoretically pure normal cost than the OASI tax item. All this indicates that the new situation created by the financial interchange cannot be handled by traditional methods and that a new approach is called for. The question is, of course, as to how far to go toward a new approach. Whether going half way is more justified than going three-quarters or all the way would seem to be largely a question of personal preference.

In conclusion, I would like to say that the questions raised in the paper, as well as in the discussions of it, do not lend themselves to unique theoretical solutions. In due course of time, perhaps, some standard methods of dealing with them will be generally agreed upon.