

*Choice of Interest Assumptions*

What are the factors that should guide an insurance company actuary, or a consulting actuary, in adopting interest assumptions for various types of business that will extend over long periods of time?

*New York Regional Meeting*

MR. JOSEPH B. CRIMMINS: The primary concern that an insurance company actuary will have in adopting interest assumptions is that his interest assumptions fall within the level of future net investment income earnings over the duration of the contract or policy so that his company can meet its contractual obligations. Coupled with this is the need to keep his company competitive in its various lines of business with other insurance companies, with noninsurance media, and with other forms of savings. While the ultimate responsibility for the interest assumptions used is an actuarial one, the investment experts and the economist must share in the responsibility. One of the distinct strengths of the insurance industry is that all three of these disciplines are available within the company organization to contribute their specialized knowledge to the solution of problems such as this.

There are several main factors that should be considered:

1. The rates of interest at which investments can currently be made and the periods of time over which it is reasonably unlikely that a significant downward or upward change will occur.

2. The characteristics of current investment channels, such as duration, repayment, call provisions, and so forth, which will generate funds for reinvestment.

3. The views of the investment experts and the economist as to the interest rate at which reinvestments can be made over the fairly short future period of time.

4. The views of the investment experts and economists as to the long-term future trends in interest rates. This requires an appraisal of investment needs and the savings flows available to finance them, as these in turn relate to the insurance companies, competing financial intermediaries, and the economy in general. This will also involve consideration of the possible effect of governmental action on future interest levels through monetary and fiscal policies. Examples of factors that must currently be considered are as follows:

**UPWARD PRESSURES ON INTEREST RATES**

- a) Long-term flow of funds analyses indicate pressures on the demand side stronger than the supply.
- b) Need for rental housing and new small homes, increasing the demand for mortgage funds. These would be required not only for new family formations

but also as a result of some backlog stemming from the recent tight money market.

- c)* Family formations requiring equipment, other durable goods, and services.
- d)* Squeeze on saving because of a population mix with increasing proportions in groups of older people and younger people, both of which tend to spend rather than save.
- e)* Need to replenish business liquidity, which has been reduced during the recent capital investment boom.
- f)* Stubborn international balance-of-payments problems, which result in higher domestic interest rates in competition with foreign capital.
- g)* Persistent inflationary trends, which make lenders demand higher rates to help offset capital loss due to rising prices, which increase the demand for debt funds necessary to purchase higher-priced housing, equipment, and other assets, and which require borrowers to pay higher interest rates in competition with equities.
- h)* Continued demand for funds for defense and nondefense government expenditures.
- i)* Increased social costs of doing business—for example, requiring businesses to make outlays for air pollution, water pollution, and so forth.

#### DOWNWARD PRESSURES ON INTEREST RATES

- a)* Easier monetary policy by Federal Reserve itself or as a result of political pressures brought to bear through housing groups, small businessmen, and so forth.
- b)* Recession with resulting time lags on government spending and tax policy.
- c)* Easing from the extraordinarily high rate of expansion in the economy.
- d)* Decline in rapid expansion in plant and equipment spending.
- e)* Hopefully increasing fiscal responsibility.

For interest assumptions extending over a significantly long period of time, it would seem prudent to adopt a decreasing scale of interest rates.

5. Trends in federal, state, and municipal taxation, as well as future trends in operating expenses, so that necessary margins may be available from interest earnings to cover changes in these items.

6. The characteristics of the contract. For group contracts, the type and extent of guarantees, the probable duration, and the extent of contract protection on cash withdrawals are important. For individual policies, the length of the policy term, the settlement options that are made available at its maturity, and the possibility of policy loans and cash surrenders are important.

7. The method of relating the dividend and rate-making practices within each department to the company's allocation of investment income by departments. For group contracts this is a major factor, and it may become of importance for individual contract lines as we learn how to deal with the many practical problems that arise.

MR. JAMES A. HAMILTON: In recent years actuaries have given a great deal of thought to the element of interest in the determination of liabilities under pension plans. Indeed, it would seem that, while decremental factors such as mortality and disability rates used to hold the prime attention of actuaries, in more recent years actuaries have so shifted their sights that the incremental factors of interest rates and the growth of the investment portfolio have moved into the limelight. Perhaps this is because mortality rates can only be measured and not controlled, while interest rates can be measured and, to a degree, managed as well.

In Britain actuaries are more frequently found giving advice on investments, while in this country the consulting actuary seeks the advice of his client before he selects an interest rate to be used in the valuation of the liabilities under a pension plan. Nevertheless, while he may try to sidestep the responsibility for any investment analysis underlying a recommendation regarding a suitable interest rate (or range of rates), the actuary should play an important part in making the final selection of the interest rate to be used. However, if the ultimate responsibility for such selection lies elsewhere, his counsel should be sought to explain the true long-range significance of the interest rate in the pension plan liability determinations. For example, the actuary should discount the natural bias of management and labor toward either the most conservative or liberal interest assumptions and, in general, lean toward a slightly conservative assumption.

There are many factors that require consideration in the final selection of the most suitable interest rate for the valuation of pension liabilities. Too frequently, diligent care is exercised in selecting the mortality, disability, and other actuarial assumptions, but only rather cavalier attention is given to the interest rate, even though we know the interest rate is apt to show much more fluctuation from case to case than will the mortality rates. Also the effect of a change in the interest rate assumed, even if modest, will probably affect pension plan costs and fund accumulations far more than would any reasonable modification of the other factors.

First we should consider the plan itself. If the plan provides for a fixed rate of contribution, such as a cents-per-hour arrangement, the benefit level that may be provided depends not only on the age and length of service distribution of the participants but also on the actuarial factors that are selected for valuation purposes. Too conservative an interest assumption will penalize the presently older employees and provide for

the accumulation of surplus in the pension fund from which increases can be paid to future generations of pensioners. Similarly, too high an interest rate will likely lead to fund inadequacies and curtailment of benefits in the future. This is particularly apt to be the case where the funding of the actuarial deficiency is deferred, with interest only being paid annually on the actuarial deficiency, a widely favored funding approach in cents-per-hour type plans. On the other hand, where the traditional benefit-oriented type of plan is concerned, an actuary will sometimes deliberately lean toward conservatism when he uses the normal cost plus interest on deficiency funding approach, assuming that any gains that may develop as a result of this approach will be applied to fund indirectly the deficiency over an indefinite but probably fairly long period of years. While in the cents-per-hour type of plan the assumption of a conservative interest rate for valuation purposes may discriminate against current pensioners, in the more conventional plan, where benefits rather than contributions are specified, the selection of an overly conservative interest rate may penalize the current year's stockholders in favor of next year's stockholders.

In the selection of a valuation rate of interest consideration should be given to the industry in which the company falls. Certain bread-and-butter industries, such as public utilities and public transportation systems, have a reasonable expectation of being long-lived, since they are, by franchise, protected from some of the competitive influences with which other industries must contend. Here a relatively liberal interest rate would seem to be indicated, but this may not always be to the advantage of the company, so that such advice may not be enthusiastically accepted by this segment of industry, which traditionally leans toward conservatism, because pension costs are relatively easy to include in its basic rate structure. Some industries are somewhat more depression-proof than others, and for these a higher rate of interest may seem more appropriate than for a cyclical industry. Furthermore, a company that is well-heeled financially, in a good surplus position, has been in business for a long time, has paid dividends consistently, and has a record of stability and capable management may be a candidate for a higher interest rate than a company that has few of these characteristics. Consequently, not only the industry but the relative position of the company within the industry may influence the actuary in his selection or recommendation of the valuation interest rate to be assumed.

The investment attitudes of the agency responsible for the handling of the funds contributed under the plan are of significance. If the investment emphasis is to be on equities, particularly on equities having

growth characteristics, then the selection of the interest rate becomes difficult. With this investment policy, it is to be expected that the basic yield rate will be low. Does this mean that the future yield accretions to be expected from the conversion of (a) realized capital improvement and (b) unrealized capital improvement into income should be ignored? It would seem that sooner or later cognizance must be given to this source of income. Our friends the accountants hold this position, and this is the direction in which the Defense Contract Audit Agency seems to be leaning. This is just another way of saying that the selection of the assumed valuation rate of interest will be dependent to some degree on the way in which the assets are valued. If they are to be valued at cost, a different choice of valuation interest rate would be indicated from that which would be adopted if they are carried at market or, indeed, from that which should be used if one of the many possible ways of recognizing some part of potential market over book is to be considered.

Still another consideration lies in the anticipated future amendments to the plan. If it is to be expected that there will be sizable increases in future levels of benefit in the plan, then initial conservatism, with little, if any, emphasis on recognition of any anticipated market over book, makes a lot of sense, since it permits the indirect accumulation of some assets to help offset the heavy initial liabilities that emanate from such increases.

If the plan is a final average salary plan, as opposed to a career average plan, it is incumbent on the actuary to interpret carefully the fact that increased benefits will no doubt accrue in the future under the final salary approach. If such increases are particularly large, they must be in part attributable to inflation and should be met not through higher current contributions that develop from the selection of an overly conservative valuation rate of interest but from the inflationary capital growth that may reasonably be expected in the future. Certainly it is not good advice to select as the valuation interest rate one that would require too many current "hard" dollars to be set aside to provide comparatively "soft" dollar benefits in the future.

What is the company's long-range need for funds? With increasing emphasis being placed on restriction of a company's pension fund as a source of funds for investment in the company and especially with current difficulties in finding additional capital, if a choice of interest rates is permissible, it may be desirable to give some consideration to the selection of a rate that will tend to curtail current contributions, within limits, in order to facilitate the meeting of current capital needs.

In any event, no matter where the actuary's peregrinations into the

realm of interest rates may take him, he must always remember that the interest rate is only one of several assumptions required to carry out a valuation of the liabilities of a pension plan. If one element is selected conservatively and another liberally, not only may there be some conflict of purpose but also some confusion as to the true meaning of the results derived. It is sometimes helpful for the actuary to evaluate the effect of his assumptions on the valuation by adopting, for testing purposes, two sets of assumptions—one conservatively and the other liberally slanted. If the results differ substantially, this indicates that he should carefully reanalyze the rates of decrement and increment in each set of valuation assumptions.

MR. DORRANCE C. BRONSON: I wish to add one factor for guiding the adoption of interest rate which I felt was omitted in the dissertations of Mr. Crimmins and Mr. Hamilton. My added factor would take account of a program's benefit components and of the envisioned incidence of claim disbursements under each such component over the years ahead.

Let me emphasize the important difference between the Crimmins and Hamilton "ball parks." The former is sufficiently general in his catalogue of factors to comprehend almost any long-term program indexed to the hazards of sentient existence (in contrast to hazards of the inanimate). The latter intentionally held to the area of pensions (including a plan's ancillary benefits), especially in respect to private plans financed in part, at least, by use of trust-fund media.

The foregoing gave the gist of the factor as displaying information on (a) benefit types and (b) claim incidence. Each of these runs a wide gamut. For Mr. Crimmins' canvas, a couple of disparate examples of benefits under item *a* are the twenty-year-endowment policy and the group type of prefunding for health insurance coverages after employees retire. With respect to item *b*, a few examples of abnormal disbursement incidence which are pertinent to Mr. Crimmins' discussion but not to Mr. Hamilton's would be a group life catastrophe; major medical claims from a sudden, severe pandemic; and a heavy run on policy loans or cash values. As for "incidence" under pension plan types (common to both speakers' subject areas), the availability of "fast cash" for numerous reasons, depending on the plan's provisions, may be important. Let me give some random illustrations: a liberally administered option to commute the full pension at retirement could evoke "cash calls," singly or in groups; a sudden rash of deaths under a plan with liberal ancillary lump-sum death benefits (some trust-fund plans carry death benefits which exceed the usual group insurance limits—e.g., the plan pays, at death

before retirement, the "individualized" reserve value of the deceased's full accrued pension [thus parlaying two age-function increases, viz., the year's greater benefit and the higher  $q_x$ ]; an ancillary benefit in some plans is a sizable lump-sum severance payment, so that "cash on the barrelhead" should be there when mass terminations of employment occur; a plan, on occasion—even if noncontributory—will permit employee loans, so that a "bunching" of outgo for this purpose *could* happen; and, finally, consider how a sudden amendment to a plan could alter the flow—from dribble to gush—of the "payout faucet" (this potential change of "incidence" is not susceptible to any kind of sketching-out in advance to aid an appraisal of the factor at issue).

I have described the attributes of the alleged missing factor, but I have not connected up said factor, per se, as contributing to a "guide" for use in choosing the interest rate for actual use. It seems elementary to me that an enumeration of the plan's benefits and an actuarial résumé of the potential payout incidence must prove helpful in assessing the future liquidity needs of a fund, by amount of benefits and by due dates. An insurance company's ever present intake of fungible money provides automatic liquidity for concurrent payouts of any benefits due. (I wonder if, under pension contracts using "separate accounts" for equity investments, there would be any effect of curtailment on this flexibility?)

However, in the compartmentalized trust-fund medium, the above automatic liquidity is absent, there being no usufructuary attributes of moneys to the trustee beyond the relatively narrow walls of a pension plan's individual trust fund standing on its own feet for meeting benefits. Consequently, full awareness of the benefit types under a plan and of the potential magnitude and incidence of future disbursements thereunder would seem to be very important for planning and implementing the portfolio on which such a plan depends. Part of these attentions to the portfolio would naturally include making such allowances, for indicated liquidity, as are deemed suitable precautions by the trustee(s). For example, numerous past cases, with which I am familiar, come to mind under which Wyatt Company actuaries prepared, for the employer and the trustee(s), one or more projections of annual or other periodicity, "expected disbursements" by type of benefit and amount payable. Such projections would often be made for a considerable period ahead, losing reliability, of course, the further you went.

#### *New Orleans Regional Meeting*

MR. BERT A. WINTER: In adopting interest assumptions that will extend over long periods of time for various types of business, we take into

account the investment results that will be credited to the business in question, by the allocation method now employed, in the probable event that the yield obtainable on amounts received or reinvested in the future is less than the historically high yield obtained in the recent past. The adjustments indicated by this criterion differ among the various types of business.

Thus, for nonparticipating, single-consideration, immediate life annuities beginning at ages higher than 60 or so, and at correspondingly higher ages for annuities with a certain period or refund feature, annuity payments cause aggregate funds to decline rapidly enough so that the yield at which interest and principal repayments can be reinvested is not significant. This is not the case for immediate annuities beginning at younger ages. We have met this problem by calculating gross single considerations by appropriately loading the sum of two net considerations. The first relates to the annuity payments in the first twenty years and assumes a rate of interest close to the yield (after tax) obtainable on its original investment. The second relates to subsequent annuity payments and assumes a substantially lower rate of interest.

The level additional interest dividends on supplementary contracts with life contingencies are calculated by using a prediction, over the duration of the settlement, of the portfolio average interest rate of the ordinary life ledger branch. This rate is derived by subtracting from the net investment income allocated to the branch by our branch-allocation method the income allocated by an equivalent method to such nonparticipating funds within the branch as single-consideration immediate annuities and annual premiums or annuity considerations paid in advance, and dividing the difference by the corresponding invested assets. The resulting total income on life income settlements is greater—for the common certain periods, both sexes, and virtually all ages of payees—than the income that could be obtained by applying the policy proceeds on our current gross consideration rate for a similar immediate annuity. The reasons for this are the following:

1. Commissions and, in some jurisdictions, premium taxes are payable on immediate annuity but not on supplementary contract considerations.
2. Other issue expenses are chargeable to immediate annuities but, in the case of supplementary contracts, are charged to the functionalized expense of administering and terminating—by death, endowment maturity, or cash surrender—the original contract being settled.
3. The projected portfolio average rate used for life income additional interest dividends runs only about  $\frac{2}{3}$  per cent less than the new-money rate employed in the calculation of the gross immediate annuity consideration rates in effect when the interest dividend scale is adopted.

Notwithstanding this dividend practice, the income provided by a new annuity purchase is all guaranteed for the life of the payee and considerably in excess of that guaranteed for life income settlements in life insurance policies and deferred annuity contracts that we have issued in the last twenty-five or thirty years. To make the use of the policy settlement more reasonable, we adopted last fall an "intermediate guarantee" that applies to all income payments due after the end of 1966 on supplementary contracts with life contingencies then in course of settlement and to contracts emerging thereafter. The level of the "intermediate guarantee" was chosen so that there would remain a margin for additional interest dividends throughout the duration of the affected contracts, but it, nevertheless, brought guaranteed payments much nearer to the level obtainable on a new purchase than the level provided by our more conservative policy guarantees.

In calculating prospective asset shares for annual premium ordinary life policies and individual deferred annuity contracts, projections of the portfolio average interest rate of the ledger branch are used, as mentioned above for life income settlements. In these projections, not only are lower new-money yields than those now being obtained used for all but the relatively near-term future, but, if general economic conditions become less favorable, account is taken of two other possible developments: (1) an increase in the roll-over rate of existing investments, if foreclosures or other adjustments increase, and (2) a decrease in "insurance cash flow" as a percentage of assets at the beginning of the year, caused by lower sales, higher lapses, and higher surrenders.

In separate accounts, unrealized capital gains or losses on investments in which policyholders have a specified contractual interest are directly reflected, along with all other results on these investments, in the company's obligations under these contracts. In the general accounts, which are dominated by obligations to pay fixed dollar amounts in cash surrender values or endowment maturities, such prompt recognition of unrealized investment results has not to us seemed appropriate. Net unrealized appreciation reflected in the asset values of general accounts investments has so far been entirely absorbed in either mandatory or voluntary asset valuation reserves.

It is conceivable that market values of such investments as common stock and real estate will rise in the future to a level where recognition of some part of unrealized appreciation in divisible surplus will be necessary to achieve substantial equity among successive generations of policyholders. While such recognition in divisible surplus might seem to call for an increase in termination rather than annual dividends, this has serious disadvantages: (1) to the policyholder, if the increased "incentive"

to cash surrender causes him to deprive himself of valuable, and possibly irreplaceable, continuing insurance protection and to subject himself to possibly unforeseen income tax consequences, to the extent that the surrender proceeds exceed his "cost basis"; and (2) to the company, which might have difficult decisions to make in regard to which investments to dispose of to meet any increased cash surrenders so induced, with possibly conflicting indications from tax considerations and considerations of the yield and diversification of the remaining portfolio.

Under these circumstances, it does not seem practical to invest in equities more than a portion of the excess of general account assets over fixed surrender and maturity values outstanding in any expectation that unrealized gains can be translated into dividends to policyholders. To the extent that equity investments prove to have a dividend yield on cost greater than the coupon yield of debt investments made at the same time or are, through growth, a particularly efficient way of accumulating surplus against such dangers as inflationary rises in policy administrative expenses, an investment of a portion of "surplus" in equities may be amply justified.

**MR. EDWARD A. GREEN:** The combination of the investment-year method of allocation, changing interest rates, and the shortage of capital funds has created more sophisticated methods of classifying group annuity cases in setting interest guarantees and purchase rate levels. This has been particularly true for newly issued deposit administration, terminal funding, and single-purchase contracts. Also, the interest and purchase rate structures have become more sensitive to changes in market interest rates, with companies changing these structures much more frequently than they did in earlier years.

The major characteristic involved in the more sophisticated rate classification is the expected pattern of the flow of funds under the contract being classified. For instance, under a deposit administration contract, the size of the safety margin needed between the interest rate assumption and the current rate of return on new long-term investments may be smaller if payments to annuitants are sufficient to offset the future flow of cash from interest and redemption payments than if the reverse is the case. The reason for this is that the reinvestment problem is minimized. Similarly, a single-purchase contract covering only retired lives at advanced ages will require less margin than one which provides deferred annuities on younger lives.

In classifying contracts according to the expected flow of funds, consideration should be given to the terms and conditions of the transfer-of-

funds provision contained in the contract, which, if exercised, would change the flow of funds. For instance, a transfer provision involving liquidation charges or credits to reflect the effect of new investment rates at the time of transfer would not require as great a margin as one with a fixed, guaranteed withdrawal value. Another factor to be considered in periods of high investment rates is the level of any deficiency reserves that may be required to meet the minimum statutory reserve standard.

The determination of interest and purchase rate levels to be used for various flow-of-fund patterns involves an understanding and evaluation of investment conditions. For instance, in periods of tight money, consideration may be given to the difference between the rate of yield at which new loans are being made and the rate at which commitments for future loans are being made and any effect on the proposed contract of this difference. Also, portfolio characteristics may make the rate of yield in the early years of a particular year's portfolio unrepresentative of the longer-term yield. These include such things as call features in bonds, repayment provisions of mortgages, and investment in lower-yielding growth stocks and certain types of real estate.

In short, the setting of interest and purchase rates for various classes of business according to expected pattern of the flow of funds requires a greater degree of acuteness, finesse, and co-operation on the part of the actuary and investment officer under investment-year allocation methods than was needed prior to the introduction of such methods.

**MR. JOHN G. SELIG:** Notwithstanding the fact that actuaries have been extremely pessimistic with regard to future interest rates on securities in the past, it is my contention that the interest rates over the next decade will be higher than those over the past decade. Some of the reasons for this are evident.

1. Industrial technology in this country has been accelerating. Changes are coming much more rapidly than they did in the past. Much of our capital equipment is obsolete shortly after it is built and must be replaced. This requires large amounts of long-term capital funds.

2. The supply of savings in this country is not sufficient to meet the demand for investment capital. The banking system has been able to generate additional funds by expanding the money supply, but this works only in the short run.

3. The deficit financing that is conducted by our federal, state, and local governments creates a great deal of pressure on the bond markets. The additional money that is made available by the Federal Reserve System to purchase these bonds later works its way back into the economy

and creates an inflationary bias. Inflation will increase the cost of borrowed money.

4. Our capital markets are greatly affected by what is happening in the rest of the world. Since our country is running a substantial deficit on its international accounts, we must maintain short-term interest rates at a high level in order to prevent short-term funds from seeking a haven in other countries. This has a tendency to place pressure on long-term interest rates.

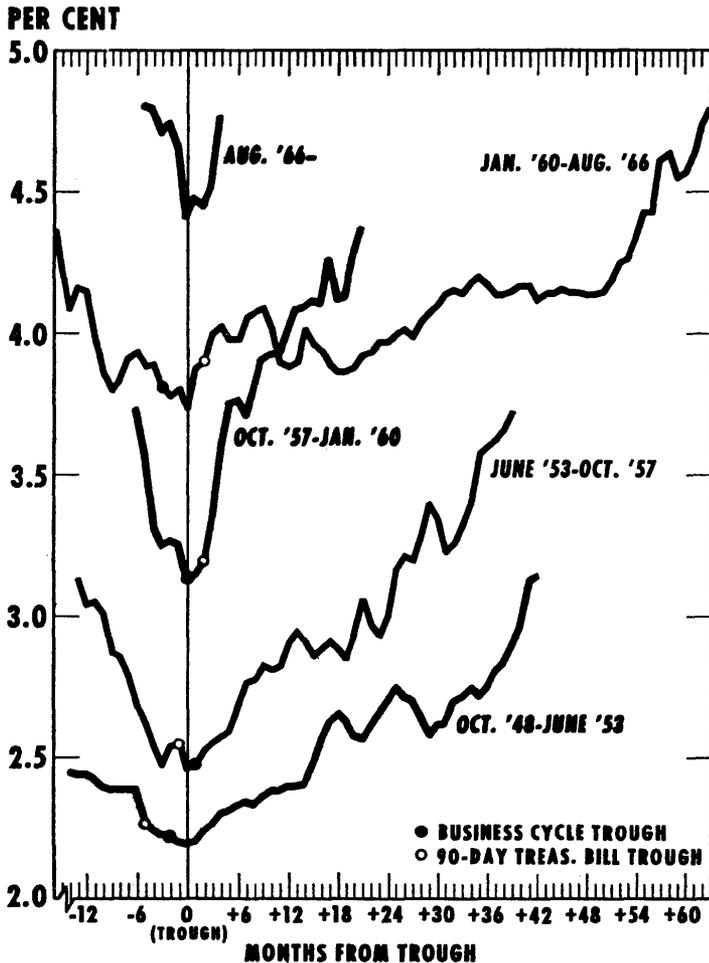


FIG. 1.—Long-term government bond yields in five postwar interest rate cycles. (Source.—Board of Governors, Federal Reserve System.)

5. The easy-money policies fostered by the federal government will tend to increase long-term interest rates over each business cycle. Professor Milton Friedman, of the University of Chicago, contends that high interest rates are the result of easy money in the past. As the money supply rises bank loans accelerate and interest rates rise even faster (see Fig. 1). The expansion of the money supply is a symptom of our political-economic environment and will continue for many years in the future.

Based on these considerations, I think that we can expect higher interest rates over the next ten years.

*Comparisons of Investment Results*

What are the factors that should be considered in making comparisons of the investment results achieved by different insurance companies and between insurance companies and other investment agencies?

*New York Regional Meeting*

MR. HERBERT J. STARK: Traditionally comparisons of investment yield received by different life insurance companies have been based on the ratio of net investment income to mean assets as mandated by the Annual Statement Blank Exhibit 2. In the valuation of the assets with which this net investment income is compared, emphasis has been placed upon stability of value, since the fundamental purpose of the statement security valuation is as a test of solvency. Thus, the great bulk of bond holdings are carried at amortized values, with market values used principally only for those bonds for which the security is so questionable that they are not considered eligible for amortization. Similarly, most mortgages are carried at face value, unless acquired at a cost differing from this, in which case the effect of the valuation is similar to amortization of bonds. Other fixed income investments are normally carried at their face value.

The effect of this method of valuation is that, except where gross changes in the underlying worth of an investment lead to an adjustment in book value, the investment yield of a particular fixed income security does not change with changes in market value during the term that it is held by the insurance company. This is desirable for a number of reasons, but its general acceptance seems to have arisen in part from an assumption that amortizable securities would in general be held to maturity. While this assumption has been quite usually realized in practice in the past, it is possible that future developments may lead to changes in this respect.

In addition to the ratio of net investment income to mean assets, the statement shows in Exhibit 4 certain capital gains and losses on investments, not including adjustments due to amortization. In Exhibit 4 there are shown all realized capital gains and losses, increases and decreases by adjustment in book values, and changes in the difference between book values and admitted values of securities. It should be noted that most unrealized capital gains and losses, except those in common stocks, are not taken into account in Exhibit 4. On common stocks held, however, since changes in market values are taken into account for the purposes of Exhibit 4, wide fluctuations in value can readily appear with changes in market prices.

It is possible to use Exhibit 4 to adjust the ratio of net investment income to mean assets shown in Exhibit 2, but I do not believe that it is usual to compute an adjusted ratio. In any event, such an adjusted ratio would still be a composite of amortized values and market values and hence not equivalent to a true market valuation.

For investment portfolios based largely on common stock and other equity-type holdings, it is usual to base comparisons of the investment results on current market values as they appear from time to time, so that all realized and unrealized gains and losses during the period of comparison are taken into account, with the result that the investment results for the period may fluctuate widely with ups and downs in the market place.

The latter base of comparison is applied generally to mutual funds and to the separate accounts of insurance companies. It is probably usually applied also in private comparisons with respect to pension trusts and other types of trust funds, although in many cases published figures are confined to results in terms of book values, with book-over-market changes allocated to footnotes or even omitted entirely. There was and still is a fundamental distinction between objectives and the valuation requirements of the two types of portfolios. However, the recent renewed interest in and increased volume of common stock holdings by life insurance companies tend to blur this distinction slightly, as does the trend in the capital markets toward the use of convertible bonds and convertible preferred stocks and toward attachment of stock purchase warrants to certain bond issues. Perhaps increased holdings of investment real estate should be considered as part of the same trend.

Thus it seems to me that the traditional intercomparisons based on the ratio of net investment income to mean assets, as shown in Exhibit 2, may be becoming outmoded, so that a more detailed analysis would be desirable for comparison of life insurance company investment results and comparison of these results with those of other portfolios. Unfortunately, as the Annual Statement is now organized, a considerable effort would be required to adjust the ratio in Exhibit 2 to secure a more meaningful basis for intercomparison.

Finally, such intercomparisons would not take into account variations in the quality of either equity or fixed income holdings. A lower-quality portfolio may—and should—show higher rates of return in favorable economic conditions. It is only in times of economic pressures that losses and defaults would show up the weakness of such a portfolio. Thus, only detailed study by expert investment men can result in a true comparison.

MR. HOWARD H. HENNINGTON: A good deal of current attention is being given to techniques for making comparisons of investment results. A very thorough study on this subject is being undertaken by a committee of the National Foundation of Health, Welfare, and Pension Plans. A first volume published discussed the techniques of calculating an effective annual rate. A second volume expected soon will deal with the complexities of comparing annual rates. Techniques will be suggested in order to take into account proportions between bond and stock investments and the effect of the general trend of the stock market on common stock results.

With the advent of separate accounts, insurance companies are interested in developing appropriate ways to present their separate-account results. A pooled separate account is usually handled in terms of unit values, so that the basic ingredients of presenting results are immediately available. However, some means of comparing the unit values with expected standards must be devised.

One can use two techniques to compare the separate-account results with the Dow-Jones index. One possibility is to calculate a separate price index for the separate-account results by treating dividend income as any other income applied on the price index to purchase additional units. In this way a pure price index can be developed which does not include dividend experience. This price index is then available for direct comparison with the Dow-Jones index. A second method is to include dividend income both for the separate account as well as for the Dow-Jones index. There are available on a quarterly basis the dividend returns on Dow-Jones stocks. Quarterly rates of return including dividends can be calculated for the Dow-Jones index, and these rates of return can then be compared with the quarterly rates of return on the separate account.

It is often of interest to compare the results of a specific fund with those which would have obtained on an insurance company separate account or on the Dow-Jones index. Given the cash-flow information of the specific fund, one can readily compute the funds which would have resulted if the insurance company separate account had been used. By means of the quarterly rates referred to earlier, including dividend income on Dow-Jones securities, one can also calculate what the specific fund would have accumulated to if it had been invested in Dow-Jones stocks. In all these comparisons the results can either be expressed in dollars or in terms of effective annual rates. The Martin E. Segal Company made an interesting comparison of twenty-five variable annuity funds using Dow-Jones, mutual fund, and insurance company results for purposes of comparison.

It is important that actuaries take pains to be sure that correct techniques are used for investment comparisons. This is a tricky field, and careful techniques are necessary to assure that comparisons are properly done.

MR. JOHN C. ANTLIFF: *Comparison between two insurance companies.*—The problems involved here are not very difficult, provided each separate account under comparison is operated with units and the unit value is known on fairly frequent valuation dates. If the periodic rates of return are known, these are just as useful as unit values.

Since most separate accounts are heavily or primarily invested in common stocks, there does not seem to be any satisfactory alternative to comparing the investment performance on the basis of total investment results, including unrealized market value changes. To draw conclusions from investment comparisons of equity funds based on market values, the period under study should be at least three years and preferably five.

One of the most important factors to consider in comparing common stock funds is the timing of contributions into the funds. It is possible to neutralize the effect of different timing by accumulating a hypothetical single deposit or a hypothetical series of equal quarterly deposits according to the rates of investment result achieved by each fund in each quarter of the period under study.

*Comparison between an insurance company and a corporate trustee.*—If the trust fund is not operated with unit values, the comparison is a fair-sized project because all the transactions from the quarterly reports of the trustee must be analyzed.

Assuming that the trust fund includes both equity and fixed income securities in significant proportions, should we compare only the total fund, or only each segment separately, or both? Several situations can be distinguished.

First, suppose that the pension client has given both the insurance company and the bank equal contributions on the same dates, with exactly the same instructions regarding investment policy and objectives. It is fair to look only at the total results of each investment manager. I would also reach this conclusion if each funding agency had been given full authority to use its judgment as to the proportion in equities.

Second, let us assume that the actual funding has been with the bank but that the client is considering the use of an insurance company. If the bank had full discretion as to the split between stocks and bonds, each segment should certainly be compared separately with the equity account and general account results of the insurance company. The combined

fund should not be compared with the insurance company, unless the manner in which the insurance company would have exercised similar discretion can be reasonably demonstrated, based on actions taken for other pension fund clients under similar conditions.

Third, let us modify the second situation by assuming that the bank was subject to substantial constraints as to the proportion of the trust invested in stocks, which is quite common in practice. Now the logical approach would be to construct a hypothetical fund corresponding to each segment of the actual trust fund, assuming that the same deposits and withdrawals that were made to either the bond segment or stock segment of the actual fund were made on the same dates to the insurance company general account or separate account, respectively. Presumably the percentage of stocks in the general account of the insurance company is small enough to be ignored or can be compensated for by adjusting the weights on the segments.

If the transactions in the actual trust were very numerous, it may be desirable to group all transactions by week or month. However, when common stocks are involved, it is not generally acceptable to group transactions over intervals longer than one month.

Since the insurance companies' results will automatically reflect the existence of a small proportion of uninvested cash, it is necessary to allocate the uninvested cash in the trust fund between the stock and bond segments.

A special problem for the insurance company is that it does not value its general account assets at market for most traditional purposes. Therefore, in order to make a comparison involving both stocks and bonds, the insurance company needs to develop a method for expressing its general account performance on a market value basis. One approach is to derive market value indices for each calendar-year end. Then it is possible to interpolate between year ends on the basis of ratios of such general account market value indices to the price indices for a published series, such as Moody's A (converted from the published yields).

*Comparison between an insurance company and a mutual fund or a bank's common trust fund operated with unit values.*—As already indicated, the mechanics of making investment comparisons are greatly simplified when unit or share values are available. Most of the general considerations noted under the previous heading apply also under this heading.

It is necessary to consider whether the two funding agencies had similar objectives during the period under comparison. What investment risks were taken? There does not seem to be any really satisfactory way to measure the risk factor. For example, it does not seem fully satisfactory

to examine the fluctuations from year to year, or quarter to quarter, in the results of each funding agency. If the basic investment policies of the two investment managers are much different, it becomes necessary to study a period of perhaps ten years before it is possible to draw meaningful conclusions.

MR. JAMES A. HAMILTON: I note that the question is phrased in terms of comparison of the investment results achieved by different insurance companies and between insurance companies and other agencies. This is not the problem that I seem to have encountered. Rather, it is a comparison of the investment results achieved by various trustees, operating under trust indentures that circumscribe their powers to a greater or lesser degree and between trustees and independent investment counsel.

Private pension funds in this country have built up to \$80-\$90 billion (over half of these funds are trustee'd), and forecasts are observed that these funds may increase to \$200-\$250 billion ultimately. It is only reasonable to expect that increasing emphasis will be placed on the performance of these funds and on the ways of meaningfully measuring such performance. Because every dollar of added investment return is a dollar less that the employer needs to contribute, many employers will want to know how the investment performance of their funds compares with the yields on others; they will want to know how their yield rates line up with the interest rate assumed for actuarial valuation purposes; they will want to know how their yield rates for one year compare with the corresponding rates for the previous year or for a number of years; they will want to know how the yield rates of their trustees, insurance companies, or investment counsel compare with other similar rates of return; how the yield rates on one part of the portfolio of investments implementing their plans compare with the results indicated by the Moody and/or Standard & Poor indices or with the results on mutual funds or college-endowment funds.

Because of the long-range importance of small variances in yield rates on the level of contributions and fund accumulation of pension plans, it is important that precision be aimed for in measuring yield rates, even if impossible to achieve in actual practice. More precise methods for determining the applicable interest rate can be obtained by narrowing the range over which transactions are assumed to occur at identical points of time. With records being set up on punched cards, each transaction can be identified by the date and nature of the transaction. With adequate computer facilities, there is no reason why the analysis of yield rates may not

be narrowed down to daily transactions. It is essential that the analyst be consistent and reasonable in his handling of the data. Certainly it avails us little if we go to a refinement such as distinguishing between a 365-day year and a 366-day leap year and then ignore accrued interest or amortization of premium.

The computer program used for developing these rates should ideally produce different yields for different classes of investments, equities, bonds, private-placement bonds, mortgages, and so forth, as well as yield rates for all classes combined. The basic formula from which the yield rate is calculated may involve exponentials of fairly high order.

While for any given fund the determination of such yield rates in succeeding years and their comparison from one year to another have great merit, trust companies and investment counsel are, understandably, reluctant to see one fund compared with another without careful consideration of the basic differences between the funds. For example, one fund may grant the trustee unlimited investment power; another may give the employer veto power over the trustee; in still others the trustee may act primarily as a mere custodian without any investment decision entrusted to him. The size of the case is also important, as is the relative standing of the employer and industry in the business community. For a small case, the trustee may be somewhat more cautious than he would be for a larger case; his investment in equities may be held down disproportionately and he may be influenced to a greater or lesser degree by the employer's wishes. The trustee may take a different investment stance according to the funded position of the plan; he may be influenced by the present generosity of the benefits or by the anticipation of benefit increases that may soon become effective. His investment policy may be affected by the short-term drain on the fund to meet pensions of an unusual grouping of potential pensioners. He may be influenced by the knowledge that the company has both a pension and a profit-sharing plan and, because of this, acquire two quite different investment portfolios.

As some of you know, National Association of Banking Audit and Control has been studying this problem lately, and a report on the progress to date was submitted to the Twenty-eighth Mid-Winter Trust Conference, as reported in an article captioned, "Measuring Pension Fund Performances," by Randall S. Robinson, appearing in the March, 1967, issue of *Trusts & Estates*. One conclusion of the committee studying this problem is that the most appropriate measure of yields is through the determination of what they describe as a "time-weighted rate of return."

Incidentally, a true comparison of one investment medium with an-

other is not indicated solely by working with yield rates but also by considering the quality of the investments selected. The yield rate is a convenient index, but it must be viewed to some degree in the light of the long-range investment philosophy of the fund manager.

In addition to the comparisons of the investment yields under different investment media, another type of study which is intriguing and important is the forecasting of yield rates using various assumptions as to what the future may hold. In developing a program for forecasting rates of investment return, it is necessary to assign values to a number of variables, such as (1) the assumed annual amount of new money for investment separated between assumed company contribution and investment income, (2) the assumed split of such new money invested in common stocks each year, (3) projected benefit disbursements, (4) the assumed long-term yield on the fixed income portion of the portfolio, (5) the assumed yield on common stocks *on the date purchased*, (6) the assumed annual increment in dividends on the equity portion of the investment portfolio, (7) the assumed percentage turnover in equities each year, and (8) an appreciation index used as a guide to the assumed average appreciation on sales of equities. Other variables affecting the fund operation can also be taken into account and "programmed in." By varying the assumptions, the long-term impact of varying investment policies can be studied. Bearing in mind that the results will necessarily be suspect, this type of analysis does illustrate rather dramatically the impact of the long-term growth in yields for a pension plan investing for the long pull.

One of our clients that has a substantial amount of unrealized gains on the equity portion of its portfolio made such a survey, using its current contributions as representative of what might be expected in the future.

A starting average yield rate of 5 per cent becomes  $6\frac{1}{2}$  per cent after twenty years (yield rates based on cost including realized capital gains) and 8 per cent after thirty-five years. Initially, the market value of the fund is about one-fourth higher than the cost value, but after twenty years it is two-thirds larger, and after thirty-five years it is more than double the cost, with the dollar amounts of both market and cost moving up substantially.

I fear that our good friends in the accounting profession would raise some questions as to the application of their *Opinion No. 8* to such a fund as we are considering here, but these questions should not inhibit our penchant for looking ahead and forecasting.

MR. PRESTON C. BASSETT: Several articles, papers, and books have been written on the "method used" to determine or measure investment

D162 DISCUSSION OF SUBJECTS OF GENERAL INTEREST

performance of pension trust funds. The various pitfalls, problems, and their solutions (approximate or otherwise) have been fairly well covered.

We have been producing statistics for many clients, showing the performance of the pension trust funds for a number of years. Within the limits of practicality, we believe that the method that we use is accurate. Without going into all the details or the reasons, we have followed these criteria:

- a) Comparable data have been submitted quarterly for all participating trusts.
- b) The investment return was measured from the dates that the trustee received the contributions or the dates that the funds became available for investment.
- c) Investment income included dividends, interest, and realized and unrealized appreciation or depreciation in values.
- d) Market values of securities were used in all cases.
- e) Separate results were produced for common stocks and for bonds as well as over-all results.
- f) Rates were determined for each quarter independently. Quarterly rates were combined to obtain annual rates, thus reducing the effect of the timing of contributions on the results.

It is important to keep in mind that the investment objective for most pension trust funds is maximum long-term growth; whether this growth comes from interest, dividends, or market appreciation is not material. Pension funds are somewhat different from many other types of investments, in that liquidity is generally unimportant, so that investments can be made with this long-term objective in mind. Short-term fluctuations in the fund value should not cause serious problems and can generally be overlooked.

For the year 1965, our study showed the following results:

| Trust  | 1965 Annual<br>Rate<br>(Per Cent) |
|--------|-----------------------------------|
| A..... | 11                                |
| B..... | 7                                 |
| C..... | 16½                               |

What is the significance of these results? Probably very little.

However, before we explore this question further, we might ask ourselves, "Why are we measuring investment performance?" It may be to see how a particular fund is doing or how good a job is being done in investing the pension contributions. I think that a more fitting answer is to see how better results might be obtained in the future. Sometimes the answer to this can be found by investigating past performances.

In reply to the above results, Trust B suggests looking at the year 1964:

| Trust  | 1964 Annual<br>Rate<br>(Per Cent) |
|--------|-----------------------------------|
| A..... | 10.1                              |
| B..... | 10.7                              |
| C..... | 15.0                              |

Trust B's conclusion is obvious—the difference in performance in any particular year is of little significance. Any trust may be relatively up or down over a short period. We suggest that the study should include a period of several years before attaching significance to the statistics.

How many are several years? The results over three consecutive four-year periods are shown in the accompanying tabulation.

| Trust  | ANNUAL RATES (PER CENT) |         |         |
|--------|-------------------------|---------|---------|
|        | 1961-64                 | 1962-65 | 1963-66 |
| A..... | 8.1                     | 6.1     | 7.6     |
| B..... | 8.5                     | 7.1     | 4.9     |
| C..... | 11.2                    | 7.9     | 11.6    |

The statistics for these four-year periods are inconclusive in comparing Trusts A and B. For eight years the results were:

| Trust  | Annual Rate,<br>1959-66<br>(Per Cent) |
|--------|---------------------------------------|
| A..... | 6.9                                   |
| B..... | 4.9                                   |
| C..... | 12.2                                  |

The longer the period, the greater are the probabilities that the results are significant. However, this too has certain dangers. How important is performance or investment results of ten years ago? Conditions may have changed so radically as to make the earlier results meaningless. For example, there may have been a complete turnover or reorganization of the investment responsibilities of the trust fund.

Leaving this point and returning to our statistics, we look at the results for 1962:

| Trust  | Annual Rate,<br>1962<br>(Per Cent) |
|--------|------------------------------------|
| A..... | - 7.2                              |
| B..... | - 1.2                              |
| C..... | -15.1                              |

Trust B observes that it is following a more conservative investment policy. In rising markets its return may not be as spectacular as Trust A, but in falling markets its losses are smaller. It is not investing heavily in speculative or volatile securities. Trust B assets are for a contributory pension plan, and thus a portion of the fund is employees' money.

Does this justify a more conservative investment policy? How much more conservative? A difference of 2 per cent per year over an eight-year period is substantial. If this differential were maintained for the future, the cost of the pension plan for Trust B would be about 40 per cent greater than the plan funded with Trust A. If a 2 per cent differential is justified, this probably more than offsets the savings to the company of having a contributory pension plan.

Putting this another way, a contributory plan may not be saving the company as much as it thinks if, as a result, investment performance is reduced.

ANNUAL RATES, 1961-66

| Trust  | Common Stocks | Bonds | Over All |
|--------|---------------|-------|----------|
| A..... | 9.8%          | 3.0%  | 6.8%     |
| B..... | 6.8           | 3.2   | 5.2      |
| C..... | 9.4           | ..... | 9.3      |

Let us continue with the analysis of the "statistics." Reviewing the figures above, Trust C says, "Why not put all the money with us? We have been the most consistent winner." At this point, Trusts A and B point out that Trust C is a variable annuity invested almost 100 per cent in equities. Trusts A and B have been restricted in their equity investments to less than 60 per cent of the total investments, based on book values. It so happens that currently Trust A has 58 per cent in equities and Trust B has 65 per cent based on market values. The averages of the investment rates during the 1961-66 period are shown in the accompanying tabulation. Thus, if Trust A had been 100 per cent in equities, it would have outperformed the others during this period.

What price is one willing to pay for keeping 40 per cent of the investments in bonds? Based on the performance above for Trust A, the cost increase is almost 60 per cent. Over all, Trust C outperformed Trust A, but the real damper was not in the securities selected but in the decision to maintain 40 per cent of the investment in bonds. It was not worth the price in the past six years, but what about the future?

This highlights another area that must be carefully considered when

comparing performance of trust funds—that is, the influence that the client has on the types of investments that the trustee can make. In commenting upon the performance of a trust fund, we must look all the way back to see who is responsible for that performance. Often the employer is involved directly or indirectly.

In the direct area, the client may have established, as indicated above, the percentage of the fund that can be invested in equities, and, as is shown in the example above, the trustee who could have invested more in equities had an advantage over the other trustees.

Some influence may be exerted where the client has final approval of investments, reviews investments after they have been made, or advises in investments. Some of the influence may be very indirect in that the trustee just “feels” that his client would not like this “type of investment.” The trustee may have both direct and indirect guidelines. Certain clients may create an atmosphere of fear of criticism, or some of promoting aggressive actions on the part of the trustee.

We have reviewed briefly, in the foregoing, some of the interpretations or causes of differences in performance. There are many others—some obvious and others not so obvious. Having noted some perhaps significant differences, we have posed some important questions regarding investment philosophy.

I would like to close with one more observation—the relationship between time and risk. Some trustees may follow a more aggressive policy by moving in and out of the market and by investing in the more volatile securities, whereas other trustees will take a more conservative approach. Only after a considerable period of time, perhaps long enough to include swings in the market, can a valid comparison be made between these two types of trustees.

I can illustrate this by the analogy of two people playing roulette. For the sake of illustration, we will eliminate zero and double zero on the wheel. The first person always plays red. Eventually he ends up even. The money in his pocket, at any point of time, will be above, below, or even with his starting position, but the fluctuations are not substantial. The second person places all his bets on No. 36. Again, eventually he ends up exactly even. At any point of time the money in his pocket will also be up or down or even, but the fluctuations are substantial. Relative to the first person, he may be either way up or way down. The deviations from the norm in the latter case are much greater than those in the former case. However, in both cases, the ultimate result is exactly even. Given time, each person has produced exactly the same result. At any specific point of time, the results may be substantially different. The second person may

be way up or down depending on the turn of the wheel. However, the volatility or fluctuations (variations from the norm) do not measure or affect the ultimate rate of return.

*New Orleans Regional Meeting*

MR. BLACKBURN H. HAZLEHURST: Evaluation of investment performance is not an exact science, and therefore a comparison of investment performance among various funds does not seem to be susceptible to a unique determination of results. For example, one investor may hold the majority of his fund in cash or low-yielding short-term securities and show very poor performance during this period as compared to an investor who puts his money out more regularly. However, should the first investor be correct in his judgment that the investment yields would rise significantly in the near future, his decision could turn out to be a good one, and a comparison on a longer term might show him to have the advantage. In addition, much of the investment performance in recent years has been reflective of capital growth. This, in turn, involves a valuation of the assets, a matter which is a function of the current market situation at any time and/or independent valuations. In either case, one comes back to the judgment of a large or small group of people as to the worth of the investments. Accordingly, the evaluation of investment performance itself comes down to a matter of judgment.

There are many other problems to be considered. For example, it has often been difficult to evaluate the performance of corporate trustees because of the many different funds that they hold for investment and the variety of degrees of freedom and corporate philosophies reflected in the investment of the various funds. In other words, not only should the ability of the trustee be considered but also the philosophy of the corporation, as it may affect the amount of the fund placed in common stocks and other facets of investment.

The size and growth of the various trust funds also affect investment decisions, so that it becomes rather difficult to secure a broad base of homogeneous experience with which to fairly test the ability of a given corporate trustee, if that is a goal of the comparison being made.

With respect to the growth of the fund, the method of analyzing investment performance may also introduce complicating factors. For example, there has been some tendency to try to determine an average investment yield for a given fund over a period of years in such a way that the fund would produce the same result had that yield been earned each year. This can be misleading if the method is applied to dollars of investment income as opposed to percentages of yield each year.

As an example, consider Fund A, which has \$100,000 available for investment the first year, \$200,000 the second year, and \$300,000 the third year. Suppose the investment performance is 3 per cent the first year, 4 per cent the second year, and 5 per cent the third year. A weighted average yield is roughly 4.5 per cent, that is, the same final dollar result would have been achieved if the fund had earned 4.5 per cent each year.

Unfortunately, it would not seem appropriate to use this average yield in comparing performance with that of other funds. For example, suppose that Fund B had \$200,000 available for investment each year and also enjoyed performance of 3, 4, and 5 per cent, with a resulting weighted average of 4.0 per cent. If the dollar method is used, Fund A's performance will appear to be superior to Fund B's performance, whereas the investment results, that is, the success of investment itself, was identical in each case. A better approach would be to average the investment yield rates themselves. In determining the investment yield rate each year, it would seem advisable to work with market values. While the results may have some volatility from year to year, any other approach seems to involve greater difficulties from the standpoint of comparing results. For example, over a period of time, the use of original cost of investments as a base for determining investment performance can lead to very high current performance figures for older funds where the current market value and dividends have risen well above the original cost and dividend rate. This problem can be largely eliminated by using the market value at the start of each year.

Similarly, older funds may include fixed income investments made at quite different nominal yields than those available in the market currently. This would cause older funds to appear to have a different performance in the current year than newer funds. Again, however, if market value is used as a base, the difference in yields will have been adjusted for at the start of the year, so that a more reasonable basis of determining the current year's performance for purposes of comparison will be available.

This leads us to some other special problems in evaluating insurance company investment performance. It used to be reasonable to look at a single simple statistic, that is, the net investment income before federal income tax earned by the insurance company on its entire portfolio as shown in Exhibit 2 of the Convention Blank. More recently, one or more segregated funds are available and need to be considered. In addition, the fixed income portion of the portfolio has been broken down by year of investment for purposes of allocating investment income by line of business and among individual pension funds.

The use of the investment-generation approach in allocating invest-

ment income leads to an elaborate array of rates of yield, which hardly simplify the task of investment comparison, especially when these rates must be adjusted by various approaches to the handling of capital gains, mandatory security valuation reserves, reinvestment, and so on.

When I was with an insurance company, I attempted to persuade the company to consider its entire general portfolio as a single fund in which each line of business, and ultimately each policyholder, owned units, the value of which would be determined at regular intervals much like any other commingled fund open to different participants. The advantage of this approach would seem to be that the complications of the investment-generation method would not be needed, since the current market value of the fund would be known at all times, thus automatically adjusting for differences in market conditions. Further, an acceptable basis for withdrawal of funds would be available, using the same valuation of assets as that used for distributing investment results to funds remaining with the company.

The disadvantage, of course, would be the problem of evaluating assets that have no ready market, such as direct placements, real estate, and so forth. However, some corporate trustees are doing exactly this by permitting participation in large pools of funds which are invested in mortgages, leasebacks, and other special investments. The asset-valuation problem is met by periodic regular judgment evaluation of the assets by senior staff especially oriented to this type of problem, giving recognition to changing market conditions and sometimes using as a guide the market reaction to a corporation's other securities which have been offered by the public.

If evaluation of the general portfolio at market value could be accomplished, it would solve a number of problems. It would ease the problems of allocating investment performance within a line of business as among policyholders and ought to ease the problem of withdrawal of funds. If you are going to pay out at book value, you have a problem. However, if you can pay out at market value and if you can determine what the market value is, then withdrawal should not be a major problem. I am concerned not only about equity among remaining policyholders but also about equity to policyholders who withdraw.

The problem then comes down to whether one can reasonably develop a market value. Evidently there are some who feel that somehow or other a judgment evaluation can be placed on the market value of such things as leasebacks and direct placements. I suppose that all this would be a monumental problem if one started with a huge portfolio in a company; there would also be the problem of doing it with any reasonable frequency.

Yet, having taken on the task of investment generation, which obviously has a lot of problems also, one must then deal with a good deal of analysis to produce and keep current with those investment-generation rates.

If the market value approach were used, it would probably have a somewhat different effect from that of the investment-generation approach because, if one is using investment generation, he is earmarking certain groups of securities for certain policyholders or certain groups of funds; whereas, if he uses the market value of the entire portfolio, everybody shares in that total portfolio.

To take an extreme case, if the investment theory used in 1957 turned out to be ultimately worth zero because of some tragedy, then the people who put their money in in 1957 would, in effect, be charged for that entire loss; whereas, if the market value had been used, all would be sharing in the 1957 investments, even if they put their money in during 1967. Even under those circumstances they would have bought a piece of the 1957 money at its then fair market value in 1967. Therefore, you get somewhat different results and perhaps a better result.

In any event, in evaluating insurance company performance in particular, not only do we have the multiple investment rates to consider but it seems to me to be of paramount importance to determine to what extent the investment performance being evaluated is actually going to be available to the policyholder. For example, I recently looked at a multi-million dollar fund, held by an insurance company, which had been recently accumulated and on which the insurance company was crediting an average yield in excess of 5 per cent to the experience fund—a very fine yield for fixed income investments. However, the withdrawable deposit fund was only being credited with something slightly in excess of 4 per cent; no dividends have appeared after several years; and the experience-rating deficit has been growing rather than diminishing, with much of the deficit being due to the build-up of rather significant contingency funds from the excess interest earned. The contingency funds are not withdrawable, nor are they within the control of the policyholder; for example, they cannot be used to pay benefits at the direction of the policyholder. Accordingly, we have a situation in which the yield is fine but the real return available to the policyholder is uncertain.

Faced with this type of problem, we have endeavored to negotiate—sometimes with some success—insurance contracts which call for the entire investment performance to be credited directly to the deposit fund and which permit the entire deposit fund to be withdrawn on a basis as fair and as independent of “special” judgment at the time of withdrawal as possible. The latter goal can only be approximated in the absence of the

kind of uniform market valuation of the insurance company portfolio used for all policyholders referred to above. There are significant differences in insurance company contracts in this regard, and these differences have a real effect in evaluating investment performance.

The point, and it applies to trustee funds as well as to insured funds, is that attempts at very refined investment comparisons are not needed if it can be shown that the general level of investment performance of the funding agency being considered is relatively good and if there is an opportunity to move away from that agency without penalty (for example, without losing any of the accrued investment performance) should the actual performance turn out to be disappointing in comparison to other alternatives. In fact, a refined analysis of performance is not really possible, for some of the reasons previously described, not to mention even more basic and imponderable factors, such as possible changes in investment staff and philosophy of each investing company and the quality of investments.

Where the comparisons of performance are attempted between different kinds of investment agencies, special factors must be taken into consideration. For example, the expenses of mutual funds can be quite high, although sometimes varying with the size of the fund. The yields of corporate trustees are typically shown before investment expenses are taken out, whereas the yields of insurance companies are frequently shown net of their investment expense. Some residual federal income tax remains on insured funds, and the rates quoted need to be checked to see if they have been adjusted for this tax, which seems to be equivalent to a negative yield in the area of 10–15 basis points. In some states there is an intangible tax on the corporate trustee funds, which also needs to be watched for.

Investment performance across the board has been good over recent periods of years, to the advantage of pension funds. While hardly simple, and ultimately bound to include some uncertainties, analysis of investment performance is still quite important, both because of the great significance of investment yield to pension funds and because there do seem to be significant differences among funding agencies, differences which tend to vary with time.