

**TRANSACTIONS OF SOCIETY OF ACTUARIES
1967 VOL. 19 PT. 2 NO. 54**

**DIGEST OF DISCUSSION OF SUBJECTS
OF GENERAL INTEREST**

Methods of Allocating Investment Income

- A. What investment-year allocation methods are in general use? How are the following items treated: (1) interest on policy loans; (2) realized and unrealized capital gains and losses; (3) income on refinanced investments; (4) income from real estate; (5) uninvested funds; (6) short-term investments; and (7) any other items given special treatment?
- B. To what extent is the investment-year method applicable through dividend treatment or otherwise to (1) individual life insurance; (2) individual annuities; (3) supplementary contracts; (4) group annuities; and (5) group insurance?
- C. How does the investment-year method affect allocation of such items as investment expense, federal income tax, and mandatory security valuation reserve?

CHAIRMAN W. JAMES D. LEWIS: Investment operations have been receiving a great deal of attention within our companies and by the actuarial profession in particular. In recent years we have seen many imaginative and constructive applications developed in all phases of investment operations. Our panel will discuss some of these developments and the problems, methods, and results associated with them.

MR. J. DARRISON SILLESKY: As a first step in preparing for this morning's discussion, I turned back to Edward Green's classic paper of 1961, entitled "The Case for Refinement in Methods of Allocating Investment Income." The main theme of that paper was a philosophical, but extremely practical, discussion of the considerations that should guide us in maintaining equity among our policyholders when we design formulas for the allocation of investment income. The message in the Green paper is as fresh today as it was six years ago, and it is well worth another reading by all of us. It should be required reading for those who have the direct responsibility for designing allocation formulas.

A portion of my assignment, as a member of this panel, is to catalogue and then discuss the variations that have been introduced into the allocation of investment income. It is the number and extent of these variations that prompted me to open my remarks with a reference to the importance of considerations of equity. I do not propose to sit in judgment on the

variations as I discuss them, and, in fact, I lack the detailed information necessary for a fair trial. I do feel, however, that the Green paper provides a set of guide points that can be of great help when faced with the difficult decisions that are involved in setting the details of a formula for actual application to a company's experience accounts.

Formal investment-generation formulas have been in use for only a single decade, but we sometimes forget that these formulas are merely a refined method of handling a problem that probably has been recognized by actuaries for more than a century. The moment that an insurance company had business on its books based on two different rate structures, the actuary must have wished that there were some way to trace the investment experience separately for the two blocks of business.

The problem of interest allocation reached a new level of importance during World War II. The then rather small number of insurance companies that sold group annuity contracts began to take employers backstage to view the experience records that lay behind dividend calculations and retroactive rate credits. Employers quickly observed that asset increases in their experience accounts were being credited with net interest in excess of $3\frac{1}{2}$ per cent, although the insurance companies were investing current receipts to yield less than 3 per cent on a gross basis. Obviously, this was no deterrent to the sale of group annuity business. In my opinion, we have not paid sufficient attention to the value of investment-generation methods during periods when interest rates are falling and in general during the low portions of interest cycles.

In the decade of the fifties, pressures were reversed. With interest rates rising, group annuity contract-holders were dissatisfied with interest credits that fell short of the results to be obtained through the purchase of good quality bonds on the open market. Now the problem of allocation of investment results became disturbing to the sales areas of insurance companies as well as the actuaries. It became clear that a system which would contribute to the insurance company's strength in all stages of the interest cycle would be attractive to the sales department in the then-current period of rising interest rates.

The actuaries on the individual insurance side of the house were aware of related problems which were most visible in connection with individual policy pension trusts. Here, the availability of guaranteed cash values added a disturbing variation to the problem. An employer might convince himself that surrender charges and loss of dividend potential were more than offset by the advantages available through investing the proceeds in publicly offered bonds of good quality. As in the case of group annuities, if the employer felt that there were additional advantages to

investing a part of the money in equities, this just made the change in funding that much more attractive.

While actuaries realized that the cash withdrawals could normally be covered out of current income and did not usually force liquidation of old, low-yielding investments, they also realized that foregoing investment opportunities at the current high interest rates had the same long-term financial impact. It also disrupted the current schedules of commitments by the investment department. Actuaries lacked the tools to measure effectively the actual losses sustained in these transactions and to compare them to a proper measure of the surplus that had been generated by the block of policies.

Thus, many individual and group actuaries were anxious to have more refined methods of measuring the investment income attributable to different classes of business. Now, let us turn our attention to the ingenuity with which these actuaries tackled the problem and attempt to form a picture of the variations in technique which developed and are still developing. In doing this, I will use some of the results of a survey presented by Mr. Albert Gubar at the New Orleans meeting.

The first decision to be faced by a company that plans to change to an investment-generation method of allocating investment income is whether to make the change purely prospective or to recognize in some way the source of the existing assets. Ten of twelve companies polled on this question chose to use a prospective method so that all of the investments made prior to inauguration of the new method could be treated as a single period of investment. While most of these companies will operate their plans on a calendar-year basis, with the investments of each year earmarked as a separate investment period, some will combine several years into a single investment period with the apparent intent of determining the end of each such period by judgment of changing investment conditions. For example, a $\frac{1}{2}$ per cent cumulative change in interest rates might cause the company to close off an investment period and begin a new one.

Two of the twelve companies that were polled elected to introduce their investment-generation methods on a retrospective basis. This should not be confused with a retroactive change. No change was made in the fund accounts that had previously been developed for the separate lines of business or for classes of business within the lines. However, the incidence of receipt of moneys in past years and the investment climate of those past years were taken into account in allocating currently the investment income now flowing from those past investments.

One of these two companies reflected the individual experience of the

preceding five years. The other tackled successfully the problem of re-creating sufficient detailed records of past years so that it could cover the entire twenty-five-year history of its group annuity business. This company maintains twenty-six investment-year classes consisting of the twenty-five most recent years on a moving basis, and an all-other category which includes all investments made more than a quarter of a century in the past.

The second major decision relates to the mechanics of the method and, as far as I can determine, should not affect the final results. Under the "fixed index" method, there is determined in each year of allocation a current rate of investment return on the dollars first made available for investment in each prior investment period. This takes into account both the change in the original average caused by reinvestment of a part of the funds and the change brought about by including the rate now realized on those reinvested funds. This composite yield rate is applied to the net asset growth of the original investment period to determine the allocation for the current year.

Under the "declining index" method, as described by Mr. Gubar, the amount realized on an investment disposed of from an earlier investment period is treated as becoming available in the current year for reinvestment. Therefore, the assets associated with earlier investment years decline continuously, while the yield rates remain relatively stable. The amounts so becoming available are allocated to lines by the ratios associated with the year from which they come. Regardless of whether the fixed- or the declining-index method is used, new money very rapidly becomes old money, and the rates change with the changing composition of the portfolio.

Now let us consider the handling of specific items of investment income that sometimes are given special attention. Rather obviously, policy loan interest arises from an identifiable portion of a company's business. In general, it comes largely from parts of the business that are not yet making use of investment-generation methods for allocations within the lines of business. Therefore policy loan interest is generally distributed in bulk to the lines of business from which it is generated. The related assets are then omitted from the investment-generation base.

Working balances in checking accounts are generally viewed as being for the general welfare of all without regard to investment period. Thus the total of any income from this source is not related to any year of investment but is spread proportionately over all years. This same general line of reasoning can be extended to other items. There seems to be general agreement that uninvested funds and short-term investments will

be handled in the same way. Alternatively, companies could treat the surplus account as though it were a line of business and then treat these items as investments of the surplus account, just as policy loans are treated as investments of specific lines of business.

The return from real estate used or occupied is generally spread. Some companies apply a similar technique to other selected properties, to provide greater equity when there is a massive concentration of real estate investment in a particular year. It appears that some companies spread the effect of all investment in real estate. Some companies also spread the impact of investment in government and municipal bonds. A few companies spread the income from common stocks.

In spite of all of these adjustments there may be difficulties in obtaining realistic rates for the first and even the second year. These normally need special attention. The problems are those associated with any exposure formula. It is difficult to obtain true consistency between the investment income in the numerator and the period of exposure of the invested assets in the denominator. For example, an assumption that all investments are made in the middle of the year will not work equitably, and it becomes clear that a single large investment at an unusual yield can exercise tremendous leverage. Rough calculations of due and unpaid income can also produce erratic results. It is of the utmost importance that any systemic error in the over-all formula be spread over all years to avoid the risk in the current high-interest period that the first-year rate is accidentally on the high side and the deficiency in the over-all investment results is pushed onto the rates for the other years.

Refinanced investments present a special problem, but one which must be tackled early because it is quite common and often involves investments of considerable size. The normal situation is to loan additional funds and to replace completely the old investment papers with new documents covering the total debt. Frequently the yield will be a compromise between the old rate and current rates, and the exact relationship will be clouded by changes in the terms as well as the period of the original loan. Some companies simply treat the original loan as having been paid off and treat the rewritten loan as a completely new transaction. However, this is apt to cause distortions in both investment periods, and many companies make an allocation of part of the loan to the original year and part to the current year.

Realized and unrealized capital gains and losses present parallel problems to those encountered in allocating interest and dividend income. In general, the methods used are determined by the decision made with respect to interest and dividend income. My own company found it

easiest to run separate calculations for unrealized gains and losses and for realized items.

While there is no mechanical reason why the mandatory security valuation reserve cannot be distributed by formulas which exactly parallel the formulas used for allocating asset items, some challenging problems are presented in working out the details. This item is treated as an investment of the surplus account in some companies, and such companies may or may not feel that it is advantageous to apply refined methods of allocation. Other companies treat it as a liability item in dividend and other calculations, and the method of allocation may be influenced by that decision.

I found no information that would lead me to believe that companies are generally allocating investment expenses by other than broad averages. A few may distinguish between acquisition and administrative expenses, and most differentiate among broad classes of investment.

Investment income plays such an important part in determining the liability for Phase I of the United States federal income tax that it is quite logical to expect companies using investment-generation methods to extend these refinements to the allocation of federal income taxes by line of business. On the other hand, the tax formula is so complicated that one would hesitate to attempt to handle both problems simultaneously. I am aware of only two companies that attempt to determine the contribution of each line to the Phase I tax liability, taking into account the investment-generation concept, and then follow the theory down to the financial experience of each group annuity contract. The more customary approach seems to be to work with the bulk asset figures and investment credits to each line of business, irrespective of the method of allocation of the investment credits.

It only remains for me to comment on the extent to which investment-generation methods are applicable to the various lines of business and the classes of business within those lines. If you remember the general tone of my opening remarks, it will come as no surprise that I thirst for all the knowledge that I can obtain as to the true financial impact on my company of the wide assortment of classes of business which it underwrites. Thus I see no limitation to the application of investment-generation methods to fund accounts, asset shares, and all special studies.

Combination companies will be interested in using this tool to re-evaluate the relative portions of company surplus that have been built up by industrial and ordinary business. The same can be said for individual versus group lines. This is particularly interesting if there is a large trans-

fer of liabilities from individual policy pension trust to the group annuity line in the same company.

In my own company we have found it to be of value to make separate investment-generation analyses by class of investment. The actuarial, controller, and investment areas have learned much from these studies. It is now much easier to converse in common language. We were surprised to find the extent of the differences in the concept of rate of yield on investments.

MR. WILLIAM H. CROSSON III: During Mr. Sillesky's discussion of the fixed-index and declining-index methods of allocating the funds by investment year, he pointed out that the two methods gave the same financial results even though there is a substantial difference in appearance. Eventually we will probably want to combine two or more generations which previously had been isolated for investment-year purposes. From this point on, the two methods will produce different results.

Since the essence of combination is to use the same interest rate with each segment of the combined funds, it is not generally possible for the results to be the same under the two systems.

MR. SILLESKY: I agree that the introduction of a select and ultimate concept means that the results are not in fact mathematically identical after the roll-over point. If the select period is adequate, the difference in the two methods will be minimal and probably is unimportant.

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?

MR. JOHN C. MAYNARD: The importance to an actuary of understanding the effects of present rates of interest and of appreciating the effects of possible future changes should hardly need emphasis. He takes up few problems which do not require him to make an assumption about future rates of interest, either explicitly or implicitly. Yet in doing so he faces a dilemma—he knows that even a modest error in his assumption can produce important results but that interest rates are essentially unpredictable. This is a tight box to live in; how does he manage to stay alive? In my experience he does so by arranging for the possibility of enough changes in future income or disbursements so that changes in interest rates can be accommodated without a threat to solvency or to a major disturbance of equities. One example is the limiting of premium guarantees to a specified number of years; another is providing for premium refunds or adjustment in benefits. The more he knows about interest rates, how they are likely to change, and what the results will be, the easier will be his task.

History of Interest Rates

It is interesting to review the changes in the yields of long-term government bonds from 1800.

Data are available on the average annual yields on "British Consols" during the last century:

From 1800 to 1820 yields moved in the range 4–5½ per cent. This is the period of the Napoleonic Wars.

From 1820 to 1840 yields moved gradually from 4 per cent down to 3½ per cent.

From 1840 to 1880 yields were steady for long periods and confined to the range 3½–3 per cent.

In 1880 the yield was at 3 per cent. It gradually reduced to 2½ per cent just before the turn of the century, then increasing to 3 per cent again in 1910.

It is convenient to pick up the story from this point by observing the yields of long-term government bonds in Canada:

At the beginning of the period, these yields were about 1 per cent higher than "Consols," but the difference narrowed and the trends were parallel.

The yield moved up sharply from 4¼ per cent in 1914 to 6 per cent in 1921, reflecting the stresses of World War I.

With the exception of a break in trend in 1931, the yield moved down steadily during the 1920's and 1930's to 3 per cent in 1939.

From 1939 to 1949 the yield was steady at 3 per cent, with a dip to $2\frac{1}{2}$ per cent in 1946 and 1947.

During the 1950's and early 1960's there was a sharp and steady upward trend to the present level of 6 per cent.

Yields of United States long-term government bonds in this century have followed a parallel path, which has been about $\frac{1}{2}$ -1 per cent below the Canadian figures.

To summarize, this history reveals three unusual periods in this century:

1. The ten-year period, from 1911 to 1921, when interest rates increased by 2 per cent.
2. The fifteen-year period, from 1921 to 1936, when interest rates dropped by 3 per cent.
3. The fifteen-year period, from 1948 to 1963, when interest rates increased by 3 per cent.

Can an interpretation be given of these changes? Two world wars have caused great expansions of the money supplies in Western countries, bringing price increases and the need to restrict further expansion by permitting interest rates to move upward. We are now more than twenty years from World War II, and two important influences can be identified:

1. Much greater responsibilities and activities of governments to achieve social welfare and progress, economic stability, and peaceful political change.
2. Extensive use of central banking systems to adjust money supplies for the purpose of solving the most pressing financial problems of the moment.

For the future it is possible to visualize a continuation of the tug of war between two policies of government. The first is the need to finance increasingly larger programs. This leads to increases in the money supply and increasing prices, as well as higher interest rates as a necessary compensation to lenders of capital in this kind of climate. The second is the political desire for lower interest rates. This means that, if price increases cease or moderate, interest rates will come down from their present high levels.

This suggests that actuaries will be wise to allow for wide fluctuations in interest rates in the future. Over what range will interest rates move in the next twenty years? I will be bold enough to suggest a range from 1 per cent above to $2\frac{1}{2}$ per cent below present levels.

Magnitudes of Change

To appreciate some actuarial magnitudes, I should like to record in the tabulation on page D274 the percentage reductions in a number of

Function	Age	Percentage Reduction
Ordinary life—net annual premium . . .	25	21%
	45	12
Ordinary life—tenth-year NLP reserve.	25	19
	45	10
Immediate annuity—single premium . .	65	7
Deferred annuity to age 65—single premium	45	23

typical functions resulting from an increase in the interest assumption from 3 to 4 per cent. These high percentages underline the importance of interest rates to the actuary.

The Revenue Statement of a Life Company

The annual earnings which are available to life companies for dividends and surplus have been lifted repeatedly in the past fifteen years by rising interest rates. There has been good news in the form of higher dividends and lower nonparticipating premiums, and the life of the actuary has been a comfortable one. The good news is likely to continue as average company interest rates continue to move upward toward the rate of interest on new investments. However, the growing margins in earnings should not be allowed to obscure the significance of a number of other trends: (1) increasing expense rates and (2) shifts in new business to lower premium plans. The result of these trends may be that the earnings potential of business being written today is relatively lower than the present earnings from business in force.

There is a real possibility that margins in the interest element have come to be relied upon to offset dwindling or negative margins in the excess of premium loadings over expenses. This is likely to happen in the dividend formula for ordinary participating business. In this formula it is difficult to introduce higher expense charges from year to year, but, if this is not done, that part of the dividend arising from interest gains will be lower than it might otherwise be, and there may be two consequences of this: (1) The net cost of high premium business is increased and that of low premium business decreased, and this at a time when life companies are seeking to improve the return on savings through life insurance. (2) Further shifts to low premium plans may make it difficult to maintain dividend scales, even if interest rates do not fall.

To conclude this discussion of the revenue statement, two factors may be noted which affect earnings in periods of rising interest rates, one of

them tending to accelerate and the other to defer earnings: (1) Increasing interest gains on surplus, contingency reserves, and nonpar business in force produces a leverage effect which accelerates earnings. This effect is dampened by United States federal income tax. (2) Single-premium annuities and new nonpar business place a strain on earnings in the year of issue because of statutory reserves at low rates of interest and deficiency reserves.

The influences that we have been discussing will, of course, begin to work in the opposite direction if interest rates turn downward.

Nonparticipating Permanent Insurance

It is wise to consider carefully the outlook for nonparticipating permanent insurance at a time when interest rates are high and when it is possible for future changes to occur over a wide range. Under these circumstances, the risk involved in guaranteeing premiums and cash values is a considerable one.

In this context it is interesting to reflect on the relationships between participating and nonparticipating business when written in one company. Participating business brings stability to the company and is a good companion for nonparticipating business. However, the earnings on both types will move in sympathy as interest rates change, and the result should be that nonparticipating business will bring acceleration to changes in the participating dividend scale. This leads to the rather obvious suggestion that attempts should be made to hold the proportion of nonpar in the new-business mixture to an acceptable ratio, particularly when interest rates are judged to be high. This brief discussion does not deal with other complicating factors, such as relations with shareholders or United States federal income tax.

Recent history has shown that when interest rates increase there is a tendency for terminations on nonpar policies to increase also. This may be regarded as subjecting the company to book losses on the liquidation of investments, and drains of this kind may not have been allowed for in the original premium calculations. This suggests that in the future, when statutory limitations permit, cash values should be set lower than natural reserves, and the plan design should be tested over a range of interest assumptions with different termination rates and different investment gains or losses being associated with each assumption. Testing of this kind should reduce the sensitivity of nonpar to changes in interest rates.

In view of the risks and rigidities of new nonparticipating business, it is doubtful if it will prove to be satisfactory to policyholders or companies in the foreseeable future.

Policy Loans

The vast majority of ordinary policies in force in the United States carry a guaranteed interest rate on policy loans of 5 per cent. This can cause inequities between policyholders when new investments earn at a higher rate than 5 per cent, as they do at the present time.

A policyholder can then reduce the cost of his insurance by taking a policy loan and investing the proceeds himself. However, in doing so, he reduces the investment earnings of the company and so tends to increase the cost of insurance to those policyholders who do not take policy loans. It is safe to assume that it was never intended that policy loans should hold back increases in dividend scale. The problem is likely to become more serious as average company interest rates increase and dividend scales are liberalized. It would be of considerable help if the initial step could be taken of removing the statutory limits on the policy loan interest rate for new policies.

In Canada, most policies in force have a guaranteed interest rate for policy loans of 6 per cent. New policies can be written without guaranteeing any rate. However, the companies continue to be bound by an agreement with the federal government not to charge a rate higher than 6 per cent.

Participating Permanent Insurance

The requirement that participating gross premiums provide each year for benefits earned leads to a statutory limit of $3\frac{1}{2}$ per cent on the interest rate for reserves and cash values. When interest rates are high, this induces a sequence of dividends which increases steeply with time. On the principle that part of the return from high interest rates is compensation for depreciation of capital, policyholders are wise if they apply at least part of their dividends toward paid-up benefits. If participating policies are used in this way, they become flexible contracts which adjust not only the net cost but also the benefit payments to changing economic conditions. It would not be surprising if automatic methods came to be used for splitting dividends into parts for these two purposes.

Treatment of Unrealized Capital Gains

To what extent is it appropriate to reflect unrealized capital gains (or losses) including such items as real estate appreciation (or depreciation) in dividend or financial experience for various lines of business? What principles are employed in the accounting for investment returns and capital gains or losses on such investments as common stocks and real estate in order to achieve substantial equity among successive generations of policyholders?

MR. WILLIAM M. ANDERSON: It is difficult to discuss the problems related to capital gains and losses in a general manner. The handling of these items may be influenced by so many factors that some knowledge of a company's lines of business, such as the extent of nonparticipating business, complexity of rate scales and dividend formulas, segregated funds and distribution within the investment portfolio of the different types of investments, is necessary to measure the impact that various methods will have on the results by line and among successive generations of policyholders. Because of this very complexity, it becomes quite important to know what is occurring and the impact it may have on the various lines with regard to the investment of funds. I would say that papers on investment-year methods, such as Mr. Green's, should be required reading whether or not one intends to use such methods.

When we were designing our first segregated equity fund, we were faced with working out the techniques of developing funds with aggregate investment returns at market. We came to realize that this technique had a broader application based upon the concept that the entire company may be treated as a large mutual fund. This led us to the determination of market values for all our assets annually and to the determination of the original base for the distribution of the market values in the form of market asset shares related to the various lines of business. We carried the structure for the base back to 1954, which was the earliest year to which we could trace a satisfactory separation of funds by line of business. From this point, the process became one of taking the market values of each of the funds at the beginning of the year and tracing the flow at market through the year in order to determine the so-called market rates of return. These were determined and developed in three components—the interest rate, the realized gain rate of return, and the unrealized gain rate of return. By removing the unrealized rate of capital gain, it is very easy to move funds to book values at the end of the year. We have found this method quite useful and use it for annual-statement purposes to allocate investment income by lines.

We develop twenty-four principal funds corresponding to the four

normal lines of business subdivided into participating and nonparticipating and further by each of three currencies in which we operate. In the process of developing these funds, there are some ticklish problems related to currencies and to common stocks.

In the case of currency, our technique involves an adjustment of the funds that in effect develops differentials related to currency liabilities which are the same as the differentials in the market rates of interest for each of the three currency asset pools. We have left common stocks out of this currency adjustment since, unlike other investments, they are not stated as investments in terms of a currency and we regard them as investment on a company-wide basis and not as investments against liabilities in a particular currency. The currency adjustment is quite important to us because some of our lines of business have considerably bigger portions in particular currencies than others.

We have used the results of this method quite extensively. It is directly involved in our new-money guarantees, related areas under group contracts, dividend scales, long-term ratemaking, and indirectly to allocate some of the overhead expense.

Our over-all technique is one of new money joining the pool, as in the case of mutual funds, and the interest return at market becomes an appropriate guide to the terms and guarantees that we will give to new money as it joins the pool. This leaves us a little more constricted than the investment-year method, where there are a considerable number of arbitrary assumptions that can be made in determining new-money rates. We are in effect saying that the current-year or new-money rate is essentially the rate at which we can acquire all our assets on the open market at one time, and this is in direct accordance with the mutual fund approach.

We also use the results of the method for allocating some of the overhead expense. This is based upon the concept that the overhead expense should be borne by surplus earnings at market after policy dividends but before operating expense. The technique is one of applying a so-called value-added tax against the lines of business in order to develop some of the money for the overhead expenses.

We realize that the methods should be supplemented at some stage by a systematic process of charges and credits that relate to the different levels of guarantees that are offered. While this is unimportant as long as the returns are well above the guarantees, it will be necessary to develop methods of reflecting the cost should the investment return at market fall below the guarantees. At present the only place in which we have a substantial difference in our guarantees is between our participating and nonparticipating lines.

While they are not essential to the operation of our method, we pay a good deal of attention to the annual-statement book values. They are designed primarily to produce rational investment income with more or less minimized net asset adjustment below the line. Under this approach, the book yield tends to lose a good deal of its significance. To achieve a reasonably realistic investment-income flow, our bond book values normally are the lower of par or purchase price. This has no perceptible effect on the investment income, but it does tend to make the book yields a little higher than they would be otherwise. However, we accumulate the deep discount bonds and, in addition, we accrue in the tax account the United States federal income tax on the accumulation. We think that it would be unfair to hold such bonds to maturity and then charge the policyholder as of that date with the capital gains tax on the appreciation from cost.

In the real estate field, where we are active in a variety of ways, we have had some problems rationalizing what we are doing. As a general rule, we use a sinking-fund-depreciation technique which, in the case of lease-backs and ground rents, is the same as amortization. Since the early write-offs are rather low, the tendency is to be quite conservative on our end targets for residual values, and in many cases the sinking fund will over a long period write off the investment even though we know that there will be eventual residual values.

In the area of developmental real estate, we buy land and we expect or are guaranteed an interest rate upon the sale at a later date. For these investments, we have been using the method of bringing through income annually an amount equal to the so-called bridge financing interest. We are developing this land to earn income and, in order to avoid being too conservative in our operating statement, the expected interest is brought through investment income but with a corresponding write-off below the line. Since our purpose is to keep the amount of investment income rational, we are not concerned with the book yields that develop.

This leads me into the third area, that of common stocks. Here we are pretty frustrated about the way things are going.

We are a company with a substantial amount of common stock, and our long-term intention is to move the portfolio upward. We are normally moving in that direction, and we find it very difficult to accept the statement treatment in either Canada or the United States, based primarily on the question of what constitutes income on common stocks.

In our opinion, the dividends on common stocks are not a suitable definition of income. Of course, our opinion is backed up by a great many prominent economists, who regard the dividends on common stocks as being nothing but capital redemptions. In other words, if you take the

view that you are a partner in the enterprise, as I think an institutional investor should do, the dividends that are received on common stocks are the same thing as the grocery-store owner taking money out of the till on Saturday night in order to spend it on Sunday.

On the other hand, we cannot accept the other concept—typically that of the individual investor—that the profit under common stocks consists of the market movement together with dividends. We think that this tends too much in the opposite direction.

The institutional investors (and I include pension funds as well as life insurance companies), who have very long-time horizons, are not buying for resale at a profit, are usually not interested in improving market values because they are continuing purchasers, and, if anybody has, have a vested interest in the market values for common stocks' staying down and going lower in order to make future purchases more attractive. When I talk to a specialist who is purchasing common stocks for an institution, I find that he is the greatest pessimist in the world. You can never get him to state that he thinks the stock market is going to go higher. He will always give you reasons why it is going lower. In fact, all our own investment people do this. When I ask them about the market, they cry, "Blue Ruin" and, of course, the obvious reason is that they expect to go on buying common stocks for the rest of their careers, and, at least from their point of view, they want to have the prices of common stocks continuing on a downtrend.

If they had their way (and I am here speaking about the corporate pension funds as well), I think that the dividend payouts on many stocks would be much lower than they are.

This adds to the problem of trying to determine what is income from common stocks. In Canada common stocks are presently involved in the Carter report recommendations. Under Carter there will be a great deal of formal allocation of retained earnings by corporations, which would mean that an institutional investor could very readily and properly treat the formally allocated retained earnings as a part of income. This, of course, would bring the income up to the point at which it would involve an earnings concept or very close to it.

Another problem has to do with the lack of satisfactory definitions of earnings. In the case of many corporations, even the most honest statements as to earnings are not really what the investor believes the earnings are. There is, for example, the corporate investment in vast amounts of research and development expense that is running, in the United States at least, some \$20 billion a year. This is depressing current earnings and, at the same time, making potential future earnings rise quite sharply.

There are a number of methods that are suggested in the literature for determining income from common stocks rather than using the earnings themselves. One method, for example, is that of applying the so-called market rates of capitalization to the total market value of the company's employed capital, both debt and equity, and then subtracting the interest requirements, thus developing at the equity level the earnings reflected by the opinion of the market.

Another method is to find out more about the so-called cutoff rates used within corporations—that is, the minimum rate of return that corporations expect to make on new investments—and to take the view that these cutoff rates are appropriate rates to apply to the market value of stocks in order to determine the minimum real income which can be expected.

It does seem to me that this is something that really needs an industry-wide solution—the primary objective being to throw dividends out the window as an income determinant and to find some other method of defining income from common stocks. I can see this solution coming about possibly through the agency of a group of blue-chip corporations who, on the one hand, have insured or trustee pension funds and who, on the other hand, have common stocks in the market that are being bought by life insurance companies and pension funds. It seems to me that at some stage such corporations will recognize that they have enough interest in this problem jointly because of their own pension funds that they would wish to arrive at some rational method of determining what the income is on common stocks.

However, a solution will not likely be reached by such corporations alone. It will probably require the co-operation of our business with the corporate pension funds and the additional co-operation of the stock exchanges and departments of insurance and quite possibly the taxing authorities.

In conclusion, if life insurance companies are going to move in the direction of more equity investments and, in particular, if they are going to have freedom and flexibility to shift their investment policies more or less at will, it is highly important that common stocks be placed in an income position in the statements that is more indicative of the underlying opinion of the investors who are buying them.

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?

MR. C. ROSS BRERETON: The first comparison should be the over-all interest rate earned as reported in the annual statement.

The over-all rate earned is not likely to give much indication of the reasons for the difference in rates earned. It then becomes necessary to establish the rates for bonds, mortgages, stocks, and so forth. The same formula may be used to determine the interest rate earned by type of security.

A higher rate in one company for a type of investment is important only when the amount invested is significant. The comparisons must take into consideration the yield by type of investment as well as the amount invested.

While the above items may explain the difference in the over-all interest rate by companies, it does not follow that a true comparison has been made for all investment results.

Let us consider some other factors besides average rates of interest earned.

The reported interest rate earned is a net rate—that is, investment expenses have been deducted. It seems necessary to obtain a net interest earned. Therefore, comparisons should be made of the investment expenses charged, keeping in mind the accuracy of the figures reported and that certain types of investments incur higher expenses. The calculation of interest rates earned includes dividends on stocks. The dividend rate may be relatively low, but the capital appreciation already realized, as well as the potential in years to come, is not reflected in the interest-rate comparison. Some companies may have lower interest rates earned because they may be operating in countries where the over-all investment yields are lower. For example, investment yields in the United States are lower than those in Canada. Thus, Canadian companies operating in the United States will probably show a lower over-all rate than if they were operating in Canada only.

In some countries, interest income is subject to tax. The reported rate includes interest before deduction of the tax. In making comparisons, the tax should be recognized in arriving at the investment results.

Some companies make a practice of writing down the book value of securities, particularly bonds. These write-offs create a form of hidden or inner reserves. Without discussing the merits of such practices, the write-

offs do increase the reported interest rate earned. Because the securities have been written down and the yield increased—if and when such securities are sold—the profit on sale is increased or the loss on sale is reduced by such write-offs. It becomes necessary, then, when making comparisons of investment results, to consider both write-offs (and any write-ups) and profit on sale and loss on sale.

Sometimes when write-offs of securities have been made, the usual amortization of bonds is not carried out. This practice will generally result in the company's showing a profit on sale on maturity, which would not arise if securities were amortized.

Some relatively new companies have been able to invest new capital and paid-in surplus at current high yields, thus showing an interest rate earned at a high level. Other companies which have a relatively higher increase in assets may be able to increase the average interest rate earned faster than companies with a lower rate of asset growth.

Let us now examine the factors that should be considered in making comparisons of investment results between insurance companies and other investment agencies.

Trust companies.—Trust companies operate:

1. Company funds, which are the shareholders' contribution of capital, and the surplus built up from earnings.

2. Guaranteed funds, which are funds developed from demand and term deposits and guaranteed investment certificates issued to the public. These certificates are promises to pay with a term usually not in excess of five years and at then-current rates of interest. Profits in the guaranteed funds are transferred to company funds each year.

3. Estate, trust, and agency funds.

Comparisons of gross interest rate earned by company funds and guaranteed funds should be made in total and by type of investment, as was suggested in comparing insurance company rates earned. Comparisons should be made before deducting interest paid on borrowed money. Profit and loss on sale, as well as write-offs, should be considered in arriving at the investment results.

Just as it is necessary to make additional tests in life companies, so it is necessary to make further study in trust company operations. Consideration should be given to the following points.

The investment provisions in the Trust Companies Act applicable to company funds and guaranteed funds are not materially different from the provisions of the insurance acts, except in real estate. Trust companies are not permitted to invest in the shares of real estate companies in the manner life insurance companies may invest. On the other hand,

trust companies may use company funds to acquire real estate for their actual use with a limit of not more than 35 per cent of the company's unimpaired paid-up capital and reserve. This higher investment in near-bank buildings furnished in a manner to attract deposits from the public will likely yield lower returns than other investments. Guaranteed funds may not be invested in real estate. Company funds may be invested under the "basket clause," whereas guaranteed funds do not have this right.

Income tax rules play a part in deciding accounting procedures followed by trust companies. For example, profit on sale in company funds is not subject to income tax, but profit on sale in guaranteed funds is taxable.

Another feature that is different in trust companies is that all overhead and administration expenses incurred, except interest paid on borrowed money, are charged to company funds. This practice overstates the net interest earned on guaranteed funds and understates net interest earned on company funds.

Annual statements to shareholders frequently combine company funds and guaranteed funds. To make satisfactory comparisons, details such as those published by the Superintendent of Insurance are necessary.

To this point, no comment has been made regarding estates, trusts, and agencies. It is in this section of a trust company business that the various investment funds operate. An example may be registered retirements savings plans, which include the equity funds. In common with mutual funds and insurance companies' segregated funds, the equity funds are valued at market value of the securities held.

Loan companies.—The operations of loan companies are very simple. Money is borrowed by issuing debentures to the public, usually for a five-year term. Deposits are also taken. The proceeds are invested in mortgages. In 1965, 79.55 per cent of the federal loan companies' assets was invested in mortgages. The 20 per cent liquidity test requires some investments in bonds and cash. This test requires 20 per cent of money deposited with the loan company to be secured by cash and/or securities prescribed by the Act. In common with trust companies, comparisons of loan companies' operations should be made before deducting interest paid on deposits and debentures. Furthermore, both in trust companies and loan companies, the company with the lower borrowing cost will have an earnings advantage over competitors.

MR. LEWIS C. WORKMAN: Beginning with the 1963 annual statement, companies were no longer required to show a rate of interest earned after deducting federal income tax in the NAIC blank. At the same time,

the emphasis in the comparisons made by the various trade journals and insurance publications naturally shifted from "after-tax" yields to "before-tax" yields. These changes were obviously made on the theory that the current federal income tax on life insurance companies was no longer based completely on investment income.

In many ways this was unfortunate, because the tax remains primarily a tax on investment income and the before-tax figures obscure certain important situations in making intercompany comparisons which are revealed by use of after-tax figures. The primary example, of course, is the effect of a company's holdings of tax-exempt bonds. A company with relatively large holdings of tax-exempt bonds will tend to show a relatively lower yield in its annual statement, because these bonds naturally sell at lower gross yields. However, the difference is supposedly "made up" by the partial deduction from income that the company receives in calculating its federal income tax, so that these bonds will yield after-tax rates comparable to other bonds.

This effect was dramatically demonstrated in a recent study that we made, wherein we calculated the approximate before-tax figures which would appear in the annual statements of various companies if each held the same relatively substantial percentage of assets in tax-exempts as our company (Central Life Assurance Company) does. We also calculated the yields which our company would show in the NAIC blank if we held the same low percentage of tax-exempts which certain other companies do.

For example, one company with few tax-exempts shows a yield which is 0.04 percentage points higher than ours in its annual statement. If that company shifted to the same ratio of tax-exempts as Central Life (at the gross yields its tax-exempts are earning), it would show a yield 0.11 percentage points lower than ours in its annual statement. Or, conversely, if our company shifted to the same low ratio of tax-exempts as that company, our published before-tax yield would be 0.03 percentage points higher than that of the other company.

MR. WAYNE A. GILLIS: My company, an all stock company, has been concerned with the problem of allocating capital gains to determine a net yield on investments. We have not been particularly concerned about distributing the capital gains by line of business.

We have about 3 per cent of our admitted assets invested in preferred stocks and about 9 per cent in common stocks. Our investment yield on common stocks (considering only dividend income) has been about $2\frac{1}{2}$ per cent. With the large percentage of common stock that we have, our investment yield, on an annual-statement basis, is much lower than it

might otherwise be. Because our over-all investment yield is low, our financial projections, and particularly our nonpar gross premiums based on this yield, were unsatisfactory.

We considered using an investment-year allocation method to get a higher investment yield for making realistic financial projections, but we decided that it was too complex for our organization. We considered other approaches to computing an adjusted investment yield taking capital gains into account, but we were either not satisfied with the assumptions that we were making or the amount of work required to get valid results. We now have a solution to this problem that probably should have been obvious from the beginning.

A big problem was justifying our method. Our justification follows: To the extent that our investment yield is better than the assumptions that we make in calculating gross premiums, the stockholders benefit, and conversely. It is, therefore, the stockholders' problem if the company has unsatisfactory experience on common stocks. Next, we can make the assumption that the management of the company will not make an investment in common stocks unless they expect to realize at least as good results, considering capital gains, as they do with other types of investments. To the extent that they realize better results with common stocks, these excess gains can be legitimately allocated to the stockholders. To the extent that the results are poorer than they are with other types of investments, the stockholders should be willing to take the losses.

Based on these assumptions, we have computed a net yield on investments excluding common stocks from the invested assets and excluding all income and disbursements related to common stocks from our net investment income. This gives a satisfactory quantitative result to our intuitive conclusion that our net yield was higher than the annual statement indicated.

This, rather obvious, method of allocating capital gains has enabled the actuarial department to measure the effect of capital gains for determining gross premiums and financial projections. In our case, with our high percentage of common stock, this method resulted in an increase in our investment yield of about $\frac{1}{2}$ of 1 per cent.