

HIGHER INTEREST EARNINGS

In view of the current higher level of interest earnings, what changes have taken place, for insurance and annuities, in the actuarial bases of premium rates, dividend schedules, policy reserves, and settlement option rates?

New York Regional Meeting

MR. WILLIAM M. WHITE, JR. said that in addition to the current level of interest earnings, the following factors affect the choice of interest assumptions in actuarial calculations: (1) mortality assumptions, (2) guarantees, (3) possible effects on taxes, (4) types of margins desired, (5) legal requirements, including deficiency reserves, (6) public relations, (7) competition and (8) leverage of the existing portfolio.

Mutual companies with adequate premium rates can usually compensate through dividends for fluctuations in the interest level. For nonparticipating contracts, however, changes in interest levels tend to be reflected in basic premium and reserve assumptions. Management usually looks to the recent past as a guide to the future.

An informal survey of the Hartford stock companies disclosed generally similar treatment of interest assumptions. Since 1948, Mr. White's company, the Connecticut General, has increased its net interest rate assumed for guaranteed cost individual policy premiums in four stages: 2.5%, 2.6%, 2.75%, 3%. Assumptions for reserves and nonforfeiture values have followed the premium rate, except that they remained at 2.5% during the period of the 2.6% premium assumption.

The guaranteed rates in the income purchase basis for the Connecticut General's retirement annuities and Insurance Income contracts were reduced from 2.5% to 2% in 1952 and are still at that level. Since 1943, the guaranteed rate for supplementary contracts has also been 2%. Non-contractually, however, payments are based on a higher rate reflecting both current interest and current mortality experience.

For annuities, Connecticut General's interest assumptions have not followed the earnings rate, but have been used as a tool to compensate for inadequate mortality assumptions. Ultraconservative interest rates, in combination with these mortality rates, result in the same aggregate premium level as would more realistic mortality and interest assumptions. With rapid changes in both factors, administrative simplicity favors leaving the premium bases unchanged. However, modern assumptions are preferable from the standpoint of relative equity by plan and age and better public acceptance. In addition, higher interest assumptions might reduce the impact of the proposed new Federal Income Tax.

In 1957, the Connecticut General revised its single premium annuities. For test rates, they adopted a purchase basis of a modification of McCarter's 1955 American Annuity Table with $3\frac{1}{4}\%$ for 10 years and 3% thereafter. The interest adjustment was a means of compensating for mortality improvement. For simplicity, an arbitrary formula using 1955 American Annuity mortality and 3% interest throughout was devised to produce roughly the same results. The single premium retirement annuity was set up using the same purchase basis, but the net single premium was accumulated at a lower interest rate, to provide for improving mortality.

The federal income tax directly influences the amount of interest either guaranteed or paid noncontractually. The size of the tax affects the amount of interest return, and the method of calculating the tax could affect the reserve interest assumptions. If the tax is based on the difference between the earned rate and the rate required to maintain reserves, a higher reserve rate would lessen the impact of the tax.

Mr. White felt that today's competition will tend to drive interest assumptions closer to the current earnings level, but that inherent long-term guarantees will still require some differential to allow for possible adverse fluctuations in the future.

MR. ARCHIE R. McCracken discussed interest rates in Canada and assumptions used by Canadian companies for Canadian business.

As a measure of interest yields on top grade securities, he noted that, despite many changes in direction of movement, yields on 15 year Canadian Government bonds have increased more than 2% in the last 10 years. Such yields were 2.75% 10 years ago, 3.25% 5 years ago, 4.75% at the end of 1958 and are now about 5% . Interest rates in general did not move this much, and the differences in yield between Government bonds and corporate securities have narrowed considerably in recent years. Mortgage rates increased from 5% 10 years ago to 6% 5 years ago and to about 6.75% today.

Over the last 10 years the average net yields of Canadian life insurance companies on their total assets, both Canadian and foreign, have moved regularly upward at about 0.15% per year. The average for 11 large Canadian companies was 3.25% in 1948, 4% in 1953 and 4.75% in 1958.

In the accompanying table, and after, Mr. McCracken summarized the average interest assumptions used by 10 of the larger Canadian companies on January 1 of 1949, 1954 and 1959.

Interest assumptions for cash values have followed closely those used for premiums. Occasionally the cash value rate has been slightly higher, but in no case has the average cash value rate differed by more than $\frac{1}{8}\%$ from the rate used for premiums.

Nonparticipating immediate annuities were generally based on 2.5% in 1949, 3.5% in 1954 and 4.75% in 1959. The average reserve interest rate for such contracts, restricted by the 3.5% limitation in Canadian law, was 2.5% in 1949 and 3.25% in 1954 and 1959.

In 1949 almost all companies used a 2.75% assumption for group annuities. In 1954 the average was 3.25% and in 1959 the average long-term interest assumption was 3.625%. However, many companies now use a higher interest rate, 4.5% to 5%, for the first 10 or 15 years of a group annuity premium deposit. Group annuity reserves were based on 2.75% in 1949 and 3.25% in 1954 and 1959.

AVERAGE INTEREST ASSUMPTIONS FOR ORDINARY CANADIAN BUSINESS

	PREMIUMS			RESERVES		
	1949	1954	1959	1949	1954	1959
Insurance—Participating						
Annual Premium	2.75%	2.75%	2.875%	2.75%	2.75%	2.875%
Single Premium	2.625	2.5	2.75	2.75	2.5	2.75
Insurance—Nonparticipating						
Annual Premium	3.25	3.25	3.375	3.125	3.0	3.125
Single Premium	3.125	3.25	3.5	3.25	3.125	3.25
Retirement Annuities—						
Participating						
Annual Premium	2.625	2.75	2.875	2.625	2.75	2.75
Single Premium	2.5	2.5	2.5	2.5	2.5	2.5
Retirement Annuities—						
Nonparticipating						
Annual Premium	2.875	3.125	3.5	2.625	3.0	3.25
Single Premium	2.5	3.375	3.625	2.5	3.0	3.25

Guaranteed rates on proceeds of Ordinary policies left on deposit have changed little, averaging 2.5% in 1949 and 1954 and 2.625% in 1959. In practice, however, the companies have allowed higher rates: 3.125% in 1949, 3.375% in 1954 and 4% in 1959.

The average interest assumption in dividend formulas was 3.5% in 1949, 3.625% in 1954 and 4.125% in 1959. Interest rates on dividends left on deposit followed closely the rate allowed on policy proceeds.

In general, where long-term guarantees are involved the companies have maintained the conservative approach and have made relatively minor increases in their interest assumptions. In some cases, perhaps, this conservative approach has been stretched rather far with respect to group annuity premiums. However, where the future trend of interest rates is of little consequence, as in immediate annuities, companies have increased

their interest assumptions very much in line with the increases in yields available on new money.

MR. CHARLES M. STERNHELL noted that earned interest rates have been increasing steadily for more than 10 years. New York Life has reflected the improved rate in its insurance and annuity dividends and excess interest allowances under settlement options and dividends on deposit. In addition, the basic interest assumption for all insurance and annuity premiums and reserves was changed from 2% to 2.5% in 1954.

In June 1958 a reduced premium scale for single premium immediate annuities was adopted, with a basic interest assumption of 2.75% instead of 2.5%. Since the investment element in immediate annuities decreases with duration, it was felt that more weight could be given to recent favorable investment returns, justifying a higher guaranteed rate than the rate for life insurance, where the investment element generally increases with duration. The same argument could not be made for deferred annuities, and these contracts continue at 2.5%.

In reviewing the single premium immediate annuity program, careful consideration was also given to dividends. It was decided to continue these contracts on a participating basis, although most companies are issuing them on a nonparticipating basis, but to provide dividends level by duration for the new contracts rather than the generally decreasing dividends provided for earlier issues. Participating rates and level dividends both provide a hedge against future adverse experience, which is much more likely under annuities than under life insurance policies. The level dividend system retains part of the earnings on the higher reserves in the earlier policy years, allowing the continuation of level dividends in the later policy years if there is no change in experience. From a sales viewpoint, a level income seems more attractive than a decreasing income; in addition, participation means that the company can offer contracts providing higher yields in the future if interest rates continue to improve.

Mr. Sternhell also mentioned that a more conservative mortality basis was adopted for immediate annuities. The *a*-1949 Table with Projection B is still being used, but the assumed entry year has been advanced from 1955 to 1960.

Omaha Regional Meeting

MR. W. MURDOCH STEWART quoted the industry's average net rate of interest earned before federal income taxes (tabulation on p. 140).

He noted that the rate has gone up by 1/10th of one percent each year and that this trend continued in 1958. He had had some conversations

with investment people and noted that it seems probable that the overall interest rate for most companies will continue to increase for some time but with a slowing down in the rate of increase.

Historically, nonparticipating premium rates are quite sensitive to changes in interest earnings and other elements involved in their computation. For many years it has been recognized that mortality rates also have been improving as well as interest rates. These two elements operate in the same direction, namely, to decrease the rates for insurance policies. In the case of the expense element of premiums, probably the tendency would be to have increased expenses and consequently increased premium rates for insurance policies unless a company is able to overcome the increase in expense rates by the greater use of automation or other methods of obtaining more efficient operation. Of recent years there have been many adjustments downward in nonparticipating rates. For the buyers

Year	Net Investment Rate
1951.....	3.18%
1952.....	3.28
1953.....	3.36
1954.....	3.46
1955.....	3.51
1956.....	3.63
1957.....	3.74

of larger policies in many cases special advantages have been given due to the introduction of graded premiums by size. In this way greater theoretical equity is attained. Also a few decreases in premium rates have been accompanied by the use of a higher interest rate in reserves and cash values. Thus the effect of improvement in interest earnings has been quite well recognized in the case of nonparticipating rates.

Participating rates are, of course, closely related to nonforfeiture benefits and reserves. In theory the actual level of the rates does not make too much difference since any apparent inequities may be adjusted through dividends. But in practice, in setting such rates there are many other considerations as well as level of interest. There have been some changes in participating premium rates, the motivating reason, he believed, being probably to grade premiums by size. In doing so presumably some attention was paid to current earnings. Analogous to the trend of nonparticipating premium rates, dividend scales have been increased. In fact they may be a more sensitive barometer of altered conditions than nonparticipating rates. All one has to do is to look at the lists of dividend actions for recent years. Either there is no change at all or there is an increase in the scale. As in the case of nonparticipating rates this increase is due to improvement in interest earnings and improvement in mortality.

In the case of the reserve bases there apparently have not been very many changes so far. Many can remember when a great deal of business was written with reserves on $3\frac{1}{2}\%$. Then there was a shift to lower interest rates down to $2\frac{1}{2}\%$ and even 2% in some cases. Normally, companies use the same rate of interest in the determination of nonforfeiture benefits as they do for reserves. The nonforfeiture benefits must be described in the insurance contract. Also in most states the basis of reserves must also be noted. This means that if the nonforfeiture benefits and reserves are changed the insurance contracts must be changed. If this occurs the rate books and generally other sales literature must be revised. In other words, under such circumstances a whole new rate program must be put into operation. This is a very expensive business and consequently is not undertaken too often. Consideration is being given in the legislatures of many states to the use of the Commissioners 1958 Mortality Table. Also there is the use of a three year differential for females. There has been much discussion on this table and it seems that opinions opposing its use have been practically eliminated. Accordingly, at the moment it would seem reasonable to believe that before the end of 1959 the use of such a table would be permitted in many of the states. It would seem that many companies are waiting until they are able to use this new table generally. At that time they would install a whole new rate program utilizing the new mortality and interest basis in their contracts. Accordingly, it seems reasonable to suppose that full recognition of the increase in the interest rate has been delayed in this area.

With respect to the rates for single premium annuities an improvement in interest rates would tend to decrease the cost per unit of annuity income, while increasing longevity would tend to operate in the opposite direction. Expense rates probably would not have too much relative effect. In theory at least the interest rates applicable to single premium annuities may be tied quite closely to current investment earnings, because the full sum is received at once and may be invested at once at the current investment rate. As a fact, many of the larger companies have decreased the rates for these annuities during 1957 and 1958. The rates were rather substantially decreased and it is evident that the primary reason for the decrease was the improvement in the interest rate.

As to settlement options, first, it seemed most appropriate to consider the fixed income option inasmuch as this option reflects interest assumptions directly. Within the past two or three years a number of companies have gone to a higher guaranteed interest rate. In other words an unmistakable trend to recognize the higher interest earnings is evident.

In the case of supplementary contracts involving life contingencies

there are the two opposing forces of improving interest and improving mortality, as in the case of single premium annuities. There have been a few changes in the past two or three years. In the case of settlement options a change means alteration in the form of insurance contract and a refiling with the various insurance departments. Under such circumstances it is customary to review many other aspects of the business so that a contract may remain without change for a number of years.

A more sensitive barometer than the guaranteed rate in the settlement options of insurance contracts is the interest rate actually allowed on such contracts as determined year by year by the insurer. Many companies have liberalized this rate within the past two or three years.

The final area surveyed by Mr. Stewart was the group field. Much of the group business is written on a term basis where the element of interest is quite unimportant. Under group annuities and group permanent insurance substantial equities are established and the rate of interest earned assumes very great importance. In the case of group annuities generally higher interest rates and lower mortality bases have been used to set rates. The over-all result has been a lowering of the cost per unit of annuity as in the case of single premium annuities.

Knowledge of dividend scales or rate reductions applicable to group lines is probably more difficult to get in detail than any other facet of the life insurance business. But because of the highly competitive nature of the business it is customary to think of every source of revenue to justify returns to policyholders. Even in the case of term coverage, interest earnings on funds held for catastrophes may be recognized. With this background it seems safe to say that the improvement in interest earnings has been adequately recognized in this area.

Looking back over the facets of the insurance industry discussed it appeared to Mr. Stewart that apart from reserves, nonforfeiture benefits and settlement options the effects of the improvement in interest rates have been very well recognized. However, in these areas for the reasons described earlier recognition has probably been delayed. But it seems reasonable to expect that in the near future the impact of the improvement in interest rates would be felt in these areas also.

MR. JAMES F. MACLEAN, speaking of the Bankers Life Insurance Company of Nebraska, noted that although the rate of interest earned before federal income taxes increased from 3.69 in 1954 to 3.94 in 1958, the rate after federal taxes has not shown this steady progression. In 1954 the rate was 3.47, dropping to 3.39 in 1955, up to 3.56 in 1957, but down to 3.48 last year.

As a consequence the company made no changes last year in rate structures.

In the previous five years, however, the annuity and settlement option program was changed to a completely participating one, using the *a*-1949 Table Projected 30 Years with interest at $2\frac{1}{2}\%$ for guaranteed values; the current dividend scale is based on the *a*-1949 Table with interest at $3\frac{1}{4}\%$. Dividend accumulation rates and other deposit rates have remained at 3% . The company is somewhat reluctant to disturb its deposit rate because (1) it has an unbroken history of never paying less than 3% in 72 years and (2) the federal income tax picture may cause a complete revision in outlook.

The one area that it is planned to consider this year is a complete revaluation of old annuities and settlement options to a modern table with interest at 3% , probably the McCarter Table. The current basis is the 1937 Standard Annuity Table with a two year setback with interest at 2% . This is also the basis used in reserve strengthening.

MR. CHARLES W. SOUTHERN stated that the net rate of interest earned, before federal income taxes, on invested funds of all U.S. life insurance companies has moved up continuously from an all-time low of 2.88% in 1947 to an estimated 3.85% in 1958.

With this improvement in the interest rate he thought it a true statement to say that actuaries have increased the interest rate they assume in making internal test results for premiums, dividends, policy reserves and settlement option rates by at least $\frac{1}{4}\%$ over that used 10 years ago. However, most companies have been reluctant to increase the assumed rate of interest in their premium rates and reserves for new issues.

This reluctance to increase the assumed interest rate in new issues might be attributed to one or more of the following reasons:

1. Federal income taxes on life insurance companies up to the present time have been based on the interest earnings of the company, and since the rate of tax has increased substantially since 1947 the rate of interest earned, after federal income taxes, on invested funds of all U.S. life insurance companies has moved up much less than the rate before taxes, or from 2.88% in 1947 to 3.44% in 1957. It seems wise to delay drastic changes in premiums and reserves until the federal income tax formula for 1958 is known.
2. The gains from increased interest earnings, whatever they might be, can be returned in dividends or used advantageously for a number of other purposes, such as strengthening reserves or offsetting higher expenses.
3. Since it is most difficult to forecast interest rates for the future with a great amount of accuracy, it seems advisable to use conservative assumptions that allow sufficient margins for fluctuations.

Even though his own company, the Bankers Life Company of Iowa, is one of those companies which has been rather reluctant to make changes in the interest rate for new issues, nevertheless the following changes have been made:

1. About 2 years ago the guaranteed interest rate in premiums and reserves for new ordinary life insurance was increased from $2\frac{1}{4}\%$ to $2\frac{3}{4}\%$ and the guaranteed interest rate on life income settlement options in such new issues from 2% to $2\frac{1}{4}\%$. At the same time the mortality rate assumed in such life income settlement options was changed to reflect further improvement in mortality.
2. About 2 months ago a substantial decrease in single premium immediate annuity rates was made. Such new rates are based on McCarter's 1955 American Annuity Table with $2\frac{3}{4}\%$ interest, whereas previous rates were based on the 1937 Standard Annuity Table set back 2 years with 2% interest. A higher assumed guaranteed rate of interest is used for such contracts, as compared to deferred annuities which are based on $2\frac{1}{2}\%$, on the grounds that the entire premium for immediate annuities can be invested immediately at the existing high rates of interest, and at the same time the reinvestment problem is minimized because of the decreasing reserves. He mentioned that the immediate annuities are participating and this year a dividend scale was adopted which results in a level dividend varying only by sex and age at issue.
3. The first of this year they revised the dividend scale for all ordinary life insurance and annuity contracts and for settlement options, increasing the interest return by an additional $\frac{1}{4}\%$ over the dividend scale adopted 2 years previously.
4. As for group business their dividend formula reflects the actual interest earnings after federal income taxes. The last change which was made in Group Annuity rates was in 1955 when the basis was changed from the Standard Annuity Table with $2\frac{1}{4}\%$ interest to the 1951 Group Annuity Table set back one year with $2\frac{3}{4}\%$ interest.