INTEREST EARNINGS AS A FACTOR IN CASUALTY INSURANCE RATE MAKING

BY

B. D. FLYNN

It is generally known that interest earnings are an important factor in the making of rates for life insurance. The contract ordinarily runs for a long term of years and interest earnings during the life of the policy must necessarily be taken into consideration in building the rates. Also, if a death claim is to be disbursed in instalments over a term of years, interest is used in computing the value of the claim. Casualty insurance contracts, on the other hand, are ordinarily written on the one year term plan and claims are generally liquidated within a short time after they are incurred. The factor of interest earnings in casualty insurance, therefore, has been looked upon as of minor importance and has not been injected, to any extent, into rate making procedure. The underwriter has appreciated that this has produced a margin of safety—and the general feeling of all interested has been that this was a good practical treatment of the matter.

Of late, however, this question of the importance of interest earnings as a factor in the making of casualty insurance rates has come to the fore as a subject of discussion by underwriters and supervising officials. There has been a noticeable tendency to magnify the importance of the factor. The question has been raised as to what part of the financial earnings of a casualty company should be considered in the making of rates. Throughout the discussions there has been a considerable amount of vagueness and confusion—possibly due to wrong approach of the problem. It is hoped that the following comments will bring about a useful and clarifying discussion.

Let us first dispose of the question as to what part of the financial earnings of a company should be considered in making rates. It has been claimed by some that a share of investment earnings rather than interest earnings should be credited to policyholders. Investment earnings of a company in a particular year are made

up of (a) interest earnings—including dividends and rents—and (b) gain or loss from sale of securities during the year. Appreciation or depreciation in security holdings is, of course, no part of investment earnings unless the appreciation or depreciation is realized by sale of securities. The only part of investment earnings which can be considered as a possible credit to the policyholder is interest earnings. The stockholders run the risk incident to appreciation or depreciation of securities and therefore any gain or loss from sale should go to their account. If stockholders of an insurance company guarantee a certain rate of interest to the policyholder on his premium, the surplus of the company must stand the strain of fluctuation in value of securities or loss through sale—just as in the case of a savings bank which guarantees a certain rate of interest on deposits.

Coming back to the question involved in the subject of this paper—the general problem has usually been attacked by endeavoring to show what part of the total interest earnings of the company should be credited to policyholders in making their rates. In most discussions, interest earnings on reserves have been considered as belonging to the policyholders—and it has even been implied that interest earnings on the company's capital and surplus should be taken into consideration. That this is a confusing and debatable view-point from which to study the problem can, I believe, be shown briefly.

The unearned premium reserve carried by a casualty company in its annual statement is made up partly from the premiums paid by the policyholders and partly from the surplus of the company. A large part of the management expense such as commissions, cost of inspections, policy writing, etc., has been spent for the unearned portion of the premiums in force at date of statement but the full unearned portion of the gross premium must be reserved by law. The interest earned by the company on that part of the unearned premium reserve which is borrowed from surplus and which constitutes the "equity" in the reserve belongs to the stockholder and not to the policyholder. Further, the annual statement of a casualty company is upon a "written" basis. It is clear, therefore, that, as interest can only be earned upon premiums after they have been paid, the part of the total reserves of the company in its annual statement based upon outstanding premiums, either unearned premium reserves or claim

reserves, can not be credited to the policyholder and reflected in his rates.

It is hardly necessary to argue that interest earnings on the capital and surplus, funds which have either been paid in by stockholders or earned in past years of operation of the company, belong to the stockholders and not to policyholders and should not properly be taken into consideration in the making of rates.

A much clearer way of looking at the problem than this effort to apportion to policyholders their share of the total interest earnings of a company is to consider the situation of the average individual policyholder and to credit him with interest on his premium at a guaranteed rate, from the time it is received until it is disbursed by the company in the form of management expense or claims. This, as a matter of fact, is the way the factor of interest is utilized in non-participating (stock) life insurance rate making. In the calculation of a life one year term rate, interest is credited to the average policyholder upon his premium until date of payment of claim. If claim is paid in instalments, interest is allowed upon the unpaid part until total claim is liquidated. Certain theoretical assumptions are necessary in life rate making procedure which are not referred to here and which have no bearing upon the general point made.

Let us work out the problem from this standpoint in a comparatively simple form of insurance—automobile collision. If a study were made of 10,000 policies of this form, it might develop that the premiums on some policies were paid on the effective date of the coverage; the premiums on others paid within 45 or 60 days and on some policies the dates of premium collection extended to a material length of time after the insurance became effective. Let us assume that on the average premiums were collected 60 days after the policies were written. Parts of the premiums for these policies would be disbursed for certain management expenses such as policy writing, inspection, etc. on or about the date of issuance of the contracts. Other expenses such as commissions would be met as premiums were paid. Still later, taxes, claim expenses and the balance of administration expenses would be met.

As a usual practice under this form of contract claims are paid soon after they are incurred. It is reasonable to assume that claims would occur on the average approximately six months

after the issuance of the contract. In order to arrive at a rough estimate of the interest earnings on this line we may assume that premiums were collected two months after the contracts were written and that the average period which elapsed before the total of premiums was disbursed for either expenses or claims was six months from the date the contract became effective. The average period, therefore, during which the carrier was in possession of premiums would be four months and interest would be earned on these premiums at a guaranteed rate of interest for one-third of a year. If the guaranteed rate were, let us say, $3\frac{1}{2}\%$, the interest on each $100 of premium would be $1.16\frac{2}{3}$ or $1\frac{1}{6}\%$.

Let us consider the problem in another line of casualty insurance which can not be handled so simply—workmen's compensation. Here premiums are collected partly in the form of advance payments due at issuance of policies and partly as premium adjustments made as a result of payroll audit due at the end of the policy term. It is clear that in this line a longer delay will be experienced in the collection of total premiums. Further, claim payments are, on the average, extended over a long period of time after claims are incurred. By studying the experience of a large number of policies, however, the average delay in receipt of premiums can be determined and also the time which will elapse before the premiums are disbursed as management expense and claims. The problem is somewhat more complicated than in the case of automobile collision, but the interest to be credited to the average policyholder at the rate guaranteed by the company for the period that the premium was held by the company can be figured without much difficulty and the result expressed as a percentage of premium.

In this connection it may be well to call attention to the fact that under present conditions interest earnings are reflected, to a certain extent, in the making of New York compensation rates. Permanent total disability claims, fatal cases with dependents, and certain permanent partial non-dismemberment claims in New York State are reported in Schedule Z at an incurred cost which reflects the amount of actual payments to the date of valuation plus the reserve for future payments which is discounted for mortality and interest. The greater portion of payments on this type of claim, therefore, enters Schedule Z experience at an amount already discounted for interest. Since the final

Schedule Z report provides the basis for compensation rate making, it is evident that in New York State at least the pure premiums underlying compensation rates are, to a certain extent, discounted for interest.

The question might be raised at this point as to the advisability of discounting *all* claim payments particularly in workmen's compensation, to some date, such as the middle of the policy year, so that rates might be based on what might be called discounted pure premiums. This would follow more closely life insurance practice—but the two problems are quite dissimilar. A brief consideration of this suggestion will show its impracticability and the unwarranted complication of the statistical mechanics if anything of this kind were attempted in casualty insurance. The most sensible and practical solution of the problem appears to be to treat the value of the interest factor in the various lines of casualty insurance rate making as a separate problem and not to introduce it into the rate making procedure, which is now sufficiently complicated.

What rate of interest could a casualty insurance company guarantee upon premiums during the period they are held awaiting disbursement? Part of the premiums in some lines are not disbursed for long periods of time—five or ten years in liability insurance—fifteen, thirty or forty-five years in a line such as workmen's compensation in New York State. The rate of interest guaranteed for such terms in the future must be established at a conservative figure. It should be borne in mind that it is necessary for a company to hold large funds on deposit for payment of claims on short notice, upon which only about 2% interest is earned. The average rate of interest earned upon mean invested funds by the ten casualty companies writing the largest volume of business for the three-year period 1925-1927 was about 4%. Looking at the matter from all angles, 3½%—which is the rate established in New York State for the commutation of workmen's compensation claims and which, also, is the usual maximum rate specified by statute for valuing the policy reserves under life insurance contracts—appears to be the maximum rate of interest which a casualty insurance company could guarantee.

Utilizing a large volume of experience, interest earnings ex-

pressed as a percentage of premiums have been worked out for various casualty lines at a guaranteed rate of 3½% as follows:

Automobile Liability	2.8%
Automobile Property Damage	1.4
Automobile Collision	1.0
Liability other than Auto	2.4
Workmen's Compensation	2.1
Plate Glass	.8
Burglary	.9
Steam Boiler and Machinery	.8

As stated before, casualty underwriters have always thought of interest earning in casualty insurance as producing a small margin of safety in the premiums. The solution of the problem offered above will permit the underwriter to continue to view the matter from this angle. Interest earnings in the various lines expressed as a percentage of premium are shown to be comparatively small. Why is it not proper to continue to view the matter of interest earnings in casualty insurance rate making in this manner—as a small but necessary margin of safety in the rates?