

balances. The question of appropriate rates of return is a difficult one, though, and it is complicated by tax considerations since many companies deliberately invest in tax-exempt securities. They thereby obtain a lower gross yield but a higher net than would be obtained from a taxable security.

The problems of determining underwriting profits from investments are complex and fascinating, and it will be some time before the methods of analysis appropriate to the various questions in this area have been fully worked out. Mr. Bailey, however, has made an excellent start.

DISCUSSION BY ALLAN L. MAYERSON

Bob Bailey's timely and thought-provoking paper is an important actuarial contribution to the perennial and occasionally emotional debate on whether, and to what extent, investment income should be included in ratemaking. Bob's paper is one of the few discussions of this topic to contribute more light than heat to the controversy.

It is obvious that insurers do earn investment income, not only from the funds contributed by their stockholders, but also from some part of the premiums paid by policyholders. If this were not so, many insurers would surely have withdrawn from certain lines of insurance which have caused persistent underwriting losses for more than a decade. A case can even be made that the solvency of some insurers has, in recent years, depended upon investment income and stock market capital gains.

It seems obvious that investment income is, as implied in Harold Curry's presidential address, taken into account in ratemaking. Whether it is explicitly or implicitly allowed for in the rating formula does not seem too important. The more important question, in my view, is whether the overall profit margin in the rates is adequate or excessive.

Most rating formulas contain an explicit loading for underwriting profit, often 5% or 6% of premiums. That these margins have seldom been realized is due to the actuaries' lack of success in predicting future losses accurately or, having predicted them, in convincing company management or state regulators to approve adequate rates. If actuaries ever become sufficiently expert in time-series analysis to predict loss trends correctly, or if our crystal balls begin to give us better answers, then the adequacy or inadequacy of the profit loading will become very important.

Many industries have a lower profit margin on sales than that built into

most property and casualty insurance rates. Grocery store chains often operate on a profit margin of less than 1% of sales. On the other hand, companies with a high ratio of capital investment to sales, such as utility companies, expect to earn at least 6% to 8% on sales.

A better basis for comparison with other industries is probably the profit margin on invested capital. To obtain this ratio, we must consider not only the underwriting profit (assuming that the loss and expense elements of the rate will someday be predicted accurately) but also the investment profit or, as Bob Bailey calls it, the "underwriting profit from investments." For example, if we assume that a property insurer can safely write a premium volume equal to three times its capital and surplus, and that its rates contemplate a 5% underwriting profit while its investment yield on premiums adds 2% to this, its return on invested capital would be 21%. If we assume that a property insurer is only permitted by a state insurance department to write premiums equal to twice its capital and surplus, with a 5% underwriting and 2% investment profit, it would earn only 14% on stockholder equity. To these amounts, of course, must be added the interest dividends and/or capital gains earned on the investment of the stockholder equity itself, in order to determine whether the theoretical return which can accrue to the owners of insurance companies compares favorably or unfavorably to the return available to investors in other businesses. I believe that some careful actuarial study of this subject is needed since, under the present system of rate regulation, someone must decide whether the profit allowance in insurance rates should be 2%, 5%, or 10% of premium. Only a careful analysis of the actual return to stockholders, predicated on reasonable assumptions as to investment earnings, volume of business written, and actual (as distinguished from expected) underwriting profit can provide a basis for such judgments. There is considerable work to be done in this field.

Another interesting question raised by Bob Bailey's paper is whether the interest on loss reserves should be considered part of the "underwriting profit from investments." It has often been argued that the interest on loss reserves is used up by inflationary increases in the liabilities, since the longer claim payment is delayed, with consequent higher interest earnings on the reserve, the higher the amount ultimately paid. Whether or not this is really true, and whether or not time-related inflation in claim payments is already included in the loss portion of the premium, is a legitimate and important field for actuarial research. It should have a bearing on whether or not the interest earnings on loss reserves should be considered a part of "underwriting profit from investments."