# REPORTS OF THE SEMINARS HELD IN CHICAGO, ILLINOIS AT THE 1961 ANNUAL MEETING OF THE SOCIETY

## REINSURANCE

(Summation by the Chairman, Paul M. Otteson, Vice President and Actuary, Federated Mutual Implement and Hardware Insurance Company. Co-Chairmen: Ruth Salzmann and Matthew Rodermund)

*Objectives and Scope*

An appropriate over-all objective was considered to be an attempt to analyze the actuarial phases inherent in the reinsurance operation. (This necessitated a preliminary discussion of the barrier that has separated the actuary from reinsurance so effectively over the years.) The main discussion then started with an analysis of the components of the "total" reinsurance function. Components which relate to actuarial theory and techniques could then be isolated. The "total function" of reinsurance was reviewed briefly. Then the limitation of subject matter to the "actuarial realm" of chance fluctuations was prescribed and the discussion proceeded along the following lines:

a. Stabilization fundamentals and functions
b. Rating problems and tools
c. Basic concepts

*Total Function of Reinsurance*

An over-all statistical review suggests an inflated evaluation of the relative importance of reinsurance in the over-all insurance operating picture. According to Best's Fire and Casualty Aggregates and Averages (1961), reinsurance premiums compared with direct premiums for certain company categories are as follows:

1960 Premiums (Millions of Dollars)

| | | *Reinsurance* | |
|---|---|---|---|
| | *Direct* | *Ceded* | *(2) ÷ (1)* |
| *Stock* | *(1)* | *(2)* | *(3)* |
| Fire and Allied—100 Std. Rate | 887 | 1,247 | 140.6% |
| Grand Total—767 Companies | 10,813 | 5,400 | 49.9 |
| *Mutual* | | | |
| Grand Total | 3,747 | 562 | 15.0 |

Reinsurance volume in total is impressive; however, reinsurance transactions are effected for many reasons:

(a) Stabilization of loss experience is the major purpose of reinsurance.

(b) Much reinsurance represents "division of spoils". A single management group can use this device to allocate or distribute premium income or costs (through commissions) among a number of companies that are joined together by common ownership or other ties.

(c) There is an accounting peculiarity that commissions are considered as earned entirely at the *transaction date* while the *written* premium is considered earned on an amortized basis. This makes it possible for companies to influence temporarily their operating gain or loss through commission types of reinsurance. The commission charge or credit can be registered in a year *other* than the year in which the major portion of earned premium amortization affects the operating results.

(d) Technical services in underwriting or claims adjustment sometimes represent an ingredient of the total reinsurance service.

The last three functions were reviewed so that they could be identified. The balance of the sessions was spent in a discussion of what was considered to be the "actuarial realm"—the stabilization of loss experience.

*Stabilization Fundamentals and Functions*

The stabilization function of reinsurance was the prime consideration of these sessions. As a prelude, three axioms were considered as basic to a comparison of cost versus value of reinsurance protection:

1. There is no element in reinsurance transactions to change or improve the income versus outgo relationship between policyholder and the direct insurer. The 100¢ dollar paid by the policyholder is all there is or ever will be.
2. The division of the premium dollar must favor the accepting company in order to cover its expenses plus an expected profit.
3. Reinsurance contracts are cancelable both ways without penalty or retribution. Reinsurers ordinarily do not furnish long term level premium insurance protection such as is found in life insurance or non-cancelable accident and health primary coverage.

The loss stabilization objective should be to cause:

$$\frac{A}{E} \rightarrow 1.00$$

Such objectives and axioms may well be at variance with reinsurance contracts we are familiar with. This was intentional. These simple truths indicate that there is no basis for reinsurance contracts which in essence insure rate level adequacy or general underwriting capability.

When reinsurance is negotiated by line of business, there is no balancing of events which provides the opportunity of offsetting the unusually good of one line against the abnormally bad of another. Likewise, when reinsurance is negotiated by company where the individual companies are controlled through a single management group because of cross ownership or other reasons, there is no opportunity of offsetting good results in one company with abnormally bad in another.

Effective stabilization as a principle must involve a total concept of offset of unusually good against unusually bad.

*Rating Problems and Tools*

As the biggest actuarial challenge seemed to exist in excess of loss and excess loss ratio contracts, the discussion was limited to these two types of reinsurance contracts.

Two possible viewpoints on rates or price were introduced. The ceding company is interested in the price in relation to stabilization need, or the probable and possible variations from normal experience. The accepting company is interested in price or rate from the viewpoint of the mathematical loss expectation. The discussion was designed to relate to both viewpoints.

Actuaries are accustomed to think in terms of composite experience and manual rates. Private passenger auto class 1A composite experience may not be completely homogeneous because of variations in underwriting standards but it is sufficiently so as to make it valuable in predicting losses.

The reinsurance situation is different because in fire and allied lines particularly it is extremely difficult to find an exposure base that is homogeneous to any practical extent.

The actual rating of a reinsurance contract reduces itself to experience-rating the risk, but in a reverse pattern to the experience-rating procedure as we know it. It is not a measure of how far an insured's rate should vary from average, but how far an insured's rate should vary from its actual experience.

The rating of an excess of loss contract can be appreciated more by observing the true purpose it serves. The reinsured, or direct writing company, wants its balance sheet to absorb only the first X dollars of every loss or occurrence, thereby assigning 100% credibility to this portion of its losses. For excess losses, however, the company does not want 100% credibility each year and therefore effects reinsurance so that its excess losses will be "averaged" from year to year.

Premiums have been used extensively as an exposure base. This presents certain technical difficulties because of changes in the pure premium portion of the rate for a single company over a period of time, and variations among different companies for any prescribed period. Changes or variations in expense loadings or in practices concerning "policyholders' dividends vs. net rates" can produce these distortions.

The consideration of losses themselves either in total or else up to some truncated valuation figure was suggested as an improvement.

It is difficult to know if the primary experience of different carriers is homogeneous to a sufficient degree to permit combination. One suggested test was to compare the xth largest loss. Experimentation concerning this approach has not been made, but analyses in direct experience indicates that it may very well prove to be a worthwhile rating tool.

The use of the mean or standard deviation of loss ratios was also introduced as a potential tool for rating or testing homogeneity in excess loss ratio contracts.

The most useful measurement of exposure, however, for a single company or a comparison of companies is the analysis of total claim cost by size of claim. This analysis will permit the primary carrier to assess loss stabilization

needs and it will permit the reinsurer to evaluate mathematical expectation at various levels.

A Table M approach to a measurement of total variation between actual and expected losses may be useful under certain conditions. This approach involves developing a ratio of losses produced by excess of actual over normal loss ratios to an exposure measure such as total premiums.

A common practice, in reinsurance circles is to expect that future experience (to be stabilized) will approximate the average loss ratios for the past five years. This approach is erroneous because it fails to recognize trend. *When sufficient data are available,* the use of a least squares trend line to replace the straight five-year average will produce a more accurate prediction of expected losses.

When sufficient data is not available for a trend line, an extrapolation of five year moving averages may be the next best alternative.

The idea of a monetary value assigned to "degree of variability" as contrasted with "mathematical expectation" was introduced. Ceding companies at least will be willing to pay more as the degree of variability increases.

*Basic Concepts*

Reinsurance protection may relate to unfavorable events that have *never* happened, that have *seldom* happened, or that happen *often* but with some degree of variation. Concerning the last mentioned type of event, a fourth reinsurance axiom might be added:

> "A normal amount of abnormal losses is not an abnormal situation and therefore is not a reinsurable hazard."

The exposure of a company may be such that 100 claims of $25,000 amount, or $2,500,000 in total, is the normal, expected experience for claims of this size. This, then, is not a reinsurable hazard. Also, it is of no consequence as to whether these claims are from a single line of insurance or a composite of many lines.

The aggregate idea permits the balancing of unusually good as an offset to unusually bad, without getting involved in the problem of reinsuring rate adequacy or other non-reinsurable elements that affect total loss ratio.

Considerable discussion in one of the sessions involved the question of the extent to which the value of reinsurance is reduced through the rigid application of experience rating on a total loss ratio concept basis. If losses will eventually have to be paid by the primary carrier, the question of value of "spread" or delay is pertinent. These "buy now—pay later" plans were considered to have little actuarial significance.

Finally, the general idea of the monetary value of stability in itself is subject to question. In the company's journey from point A to point B, what is the value of "steady speed" as compared with "fast starts" and "abrupt stops"? Possibly the element of knowledge and the ability to separate "chance" from "cause" will have bearing on the answer to this final point. Also, this question might introduce broader phases of the loss experience stabilization through reinsurance problems such as:

(a) the taxable investment income, Federal tax, and loss ratio vulnerability triangle; and

(b) capital structure as a factor in shaping reinsurance policy and determining loss experience needs.

In general, the discussions suggested in a convincing manner that there are many areas in reinsurance to challenge the actuary's skill.

## REPORTS FOR MANAGEMENT

(Summation by Clarence S. Coates, Actuary,
Lumbermens Mutual Casualty Company)

The broad title for this seminar was selected for the deliberate purpose of encouraging a presentation of the various kinds of reports that were being made for management and inviting questions and discussion concerning them.

It was pointed out that the Annual Statement itself and its related Insurance Expense Exhibit were reports for management as well as mandatory documents filed with Insurance Departments. Schedule P and Page 14 were touched on, and the desirability, even necessity, of developing a full Insurance Expense Exhibit on Direct, Reinsurance Accepted, and Reinsurance Ceded sections separately before combining into the filed "Net" basis, was emphasized.

Various types of production comparison reports were discussed, and the importance of bringing in the "Share of Market" aspect was highlighted. Mention was made of the desirability of measuring progress in "New" production separately from total production.

On experience reports the discussions and comments ranged over the entire gamut of lines of insurance and their differing characteristics. Policy year, accident year and calendar year approaches were touched upon, bringing out advantages and disadvantages and areas of most logical application. Considerable interest was shown in the discussions of how best to develop and present experience by producer. Development of trend in average loss cost per injury in such lines as compensation and bodily injury, and using these for a check on loss reserve levels as well as for experience was another interesting subject. The need for improving reports so that instead of being merely historical in nature they would enter into the projection into the future area was brought out.

Discussion throughout was frequent and lively, and would undoubtedly have continued longer had time permitted. Grateful acknowledgment to Messrs. Norman Bennett and Dunbar Uhthoff for their participation in the planning and carrying through of the seminar is sincerely made.