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EXHIBIT 2
Ordinary Life Insurance
1981 - 86

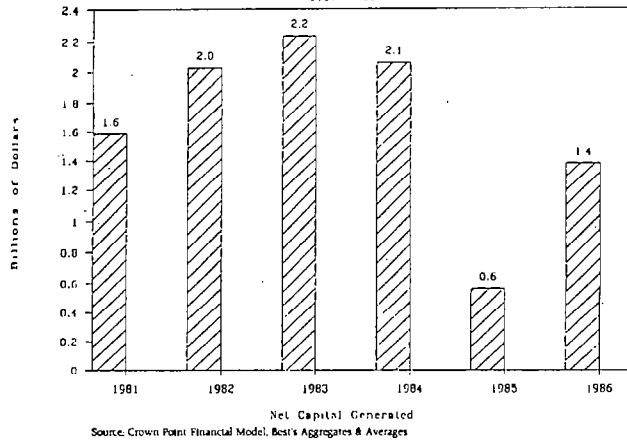
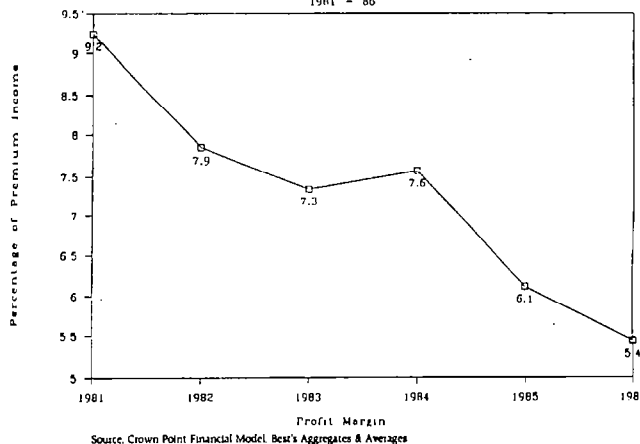


EXHIBIT 3
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Retention Analysis

by Jerald Helm

(Ed. Note: The following article is reprinted with permission from the Reinsurance Section Newsletter from March 1987.)

The setting of proper limits of retention of risk for individual lives is an important piece of a company's total plan of operation. An under-retained company may find that it may be able to afford to increase its retention and decrease per unit expenses through economies of scale. On the other hand, an over-retained company may be risking excessive liability.

An important reason then, for retaining only a portion of the business issued, is to stabilize expenses resulting from claims from large policies. If the amount of claims could be predicted under various retention scenarios, a company could choose the retention level which would best fit its financial situation. Predicting these claims may be accomplished by using techniques of probability and statistics to derive expected claims and the associated standard deviations. An example may help with understanding the procedure.

There are several items of input needed to perform a retention analysis. The M.I. Low Life Insurance Company has the following distribution of policies, representing its total in force by face amount, before reinsurance:

Policy Distribution		
Size		Count
0 - 5,000		5,082
5,001 - 10,000		6,962
10,001 - 25,000		9,679
25,001 - 50,000		5,131
50,001 - 75,000		3,953
75,001 - 100,000		1,322
100,001 - 125,000		722
125,001 - 150,000		479
150,001 - 175,000		251
175,001 - 200,000		185
200,001 +		264

In addition, an evaluation of the company's claims experience can be made to estimate an overall rate of mortality. M.I. Low Life has experienced a mortality rate of 1.85 per

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To realize the potential of these new ventures, companies must move quickly to make fundamental changes in their marketing strategies, cost structures, asset-liability management, underwriting methods, and capital structures. To effect the transition, companies are beginning to employ the same financial management methods industrial companies have successfully used, such as discounted cash flow, financial ratio analysis, capital asset pricing modeling, and break-even analysis.

At the same time, companies must be careful to avoid techniques which have outlived their usefulness. For example, while return on equity is still a useful framework for financial decision-making, it is deficient as an overall corporate goal. "Return on management" is beginning to replace "return on equity" as the relevant benchmark for measuring company performance.

This creates a challenging environment for actuaries. To help

companies make the transition into the 1990s, actuaries must be aware of financial management techniques developed by MBAs, CPAs, economists and others. Many traditional approaches used by actuaries are now irrelevant and must be replaced with modern methods.

Restructuring the insurance industry is also creating pressure for a transition in actuarial practice. To be part of the solution, we must update actuarial science and expand into new areas. Among other things, this will require a revitalized research effort by the Society of Actuaries. Even more so, both basic and continuing education must extend into nontraditional topics. And each of us must look for innovative ways to help our companies and clients to be successful in creating a new base of profitability for the 1990s. Our challenge is to keep up with the pace of change that is taking place in the life insurance industry. If we are successful, the actuarial profession and the insurance industry will prosper together.

Retention Analysis cont'd.

thousand. The final piece of information needed is the estimate of the ratio of the net amount at risk to the face amount. (One source could be the data for reserves released on actual deaths.) In this case, the ratio is .97.

Armed with all this data, the expected claims and the associated standard deviations referred to earlier can now be determined. The result of using these statistical values, referred to as the Output Data table, provides, for each level of retention shown, an amount of Projected Maximum Net Retained Claims for each of three probability levels. Each cell of this table can be interpreted as being the projected maximum amount of claims retained, of those incurred in one year's time, net of reinsurance, for the given retention and probability level. Reinsurance is assumed to occur on each and every dollar of insurance over the given retention level. Each probability level, 84.13%, 97.73%, and 99.87%, corresponds to projected claims being less than or equal to expected claims, plus one, two, and three standard deviations, respectively, assuming the Policy Distribution data [have] a Normal statistical distribution.

The first step in evaluating the Output Data table is to decide the degree of certainty desired by choosing a probability level. The level chosen is dependent upon company philosophy: a conservative philosophy would choose a high probability level; an aggressive philosophy would be satisfied with a low probability level. Each probability level may be interpreted as corresponding to a degree of comfort: the one which feels most comfortable, and in harmony with company philosophy, is the one which should be used. Once the probability (comfort) level is decided upon, retained claims may be compared at different levels of retention.

Suppose M.I. Low Life has a middle-of-the-road philosophy. At a probability level of 97.73%, and retention of \$100,000, the maximum amount of claims retained, of those incurred in one year's time, is projected to be \$2,167,828. This means the probability of *not* exceeding \$2,167,828 in retained claims (\$587,010 over expected) in one year's time is 97.73%. This same method of evaluation may be used for any combination of retention and probability levels.

The graphic representation of data from the Output Data table allows for additional insight into the relative magnitude of claims at various retention and probability levels. [Generally,] as retention levels increase, the marginal difference in Projected Maximum Net Retained Claims decreases. This is true at each probability level.

It can also be seen, as expected, that even though the probability of *not* exceeding a given amount is greater, the amount of Projected Maximum Net Retained Claims increases significantly as the probability level increases.

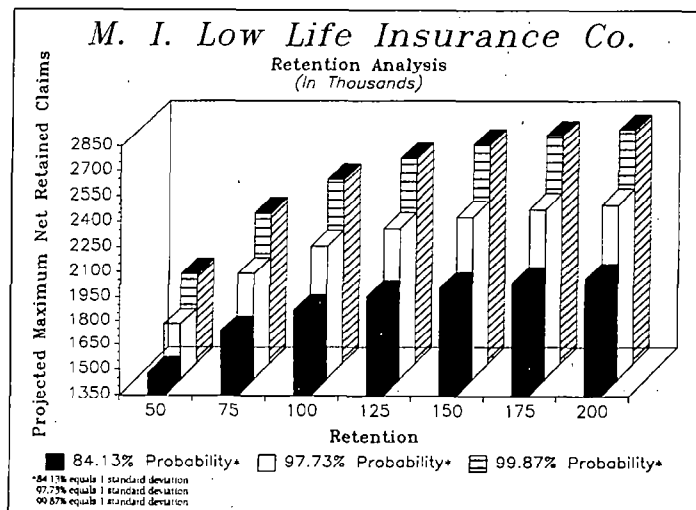
Since this analysis is based on Policy Distribution data collected at a specific point in time, it is only scientifically accurate while there is not a significant change in the underlying distribution of policies.

The Output Data table and graphic representation only consider the theoretical or solvency aspect of retention. There are also several practical aspects to consider before a retention level can be set:

1. *Volume reinsured.* The size of a reinsurance account correlates to a reinsurer's willingness to provide capacity as well as to perform needed services.
2. *Cost of reinsurance.* The costlier the reinsurance, the greater the incentive to retain.
3. *Administrative cost.* Administrative cost is particularly important for individual cession reporting. Retention plus a corridor allows for elimination of smaller, costly cessions. Retention should be set to minimize the number of small reinsurance cessions.
4. *Recapture.* Recapture, subject to reinsurance treaty provisions, should be timed to help meet corporate earning objectives.
5. *Surplus impact.* To the extent the reinsurance program cushions surplus strain, an increase in retention will cause a statutory strain.
6. *Earning stability.* The theoretical or solvency aspects considered in the Output Data table and graphic representation were based on an assumption of no variation in cost of reinsurance at different retention levels. In fact, the cost of reinsurance was not considered at all, and is a very real cost that should not be ignored.

Table 1: Output Data Table
Projected Maximum Net Retained Claims at Probability of

Retention	M.I. Low			
	Expected Claims	84.13%	97.73%	99.87%
50,000	1,267,696	1,478,796	1,689,896	1,900,996
75,000	1,477,469	1,740,078	2,002,687	2,265,296
100,000	1,580,818	1,874,323	2,167,828	2,461,333
125,000	1,643,036	1,958,480	2,273,924	2,589,368
150,000	1,680,981	2,011,870	2,342,759	2,673,648
175,000	1,704,210	2,045,849	2,387,488	2,729,127
200,000	1,718,598	2,067,745	2,416,892	2,766,039



Retention Analysis cont'd.

7. *Psychological impact.* The shock created by signing checks for claim amounts significantly greater than to what one is accustomed could cause knee-jerk decisions which could affect an underwriter's willingness to take necessary risks.

Clearly, any decision to change retention *must be the decision of the company.* With that in mind, M.I. Low Life should consider the issues raised in this report, plus any other plans likely to financially affect it. If the current retention of M.I. Low is \$50,000, it might be difficult to justify the extra claim expenses predicted by increasing retention to \$75,000 or \$100,000. However, if M.I. Low Life is currently at \$100,000, the marginal increase in claim expense is relatively minimal if retention is increased to \$125,000 or \$150,000. If retention is currently at \$100,000, an argument could also be made to decrease retention to \$50,000. Perhaps the expected decrease in claims would be more than enough to offset any profits given up by such a decision. [One factor which cannot be ignored in making decisions such as these is the cost of reinsurance.]

As is true with any statistical model, an analysis of retention is subject to some claims fluctuations due to statistical error, invalid assumptions, invalid data, or any other invalid input into the analysis.

Consider a company wanting to increase retention and at the same time insure against adverse mortality. Such a company could purchase Stop Loss insurance to cover losses beyond the claims predicted by the retention analysis. A typical Stop Loss program covers, up to a company selected maximum benefit, 90% of net retained claims beyond a loss limit point. The minimal premium for Stop Loss coverage will generally be much less than the profits realized from an increase in retention. Furthermore, large losses caused by accumulated unexpected claims, if they occur, will be controlled. Stop Loss coverage then, could be the answer for a company on the verge of increasing retention, but wanting added insurance from experiencing increased claims resulting from such a decision.

Jerald Helm, not a member of the Society, is an Actuarial Assistant at Security Benefit Life. He works primarily with issuing quotes on coinsurance and stop-loss insurance.

Spotlight on the Sections

The Investment Section

by Robert D. Hogue

The SOA Board recently approved forming another special interest section, the Investment Section. During the new section's organizational period, 10% of the Society's Fellows applied for membership. A look at the employment status of this 10% indicates that a small number are involved in investment-related work. It seems that, if their present duties have not caused them to join, then their perceived future duties have.

In truth, I am surprised that so few chose to enroll. For over a decade our industry has been changing in ways that are severely affecting both its fundamental operations and our roles and responsibilities within it. Actuaries used to be first concerned with rates of mortality, morbidity and persistency and second with those of interest and expense. Today the reverse is true, and it is this single observation which explains most of the changes occurring within the industry and the profession.

The attention we are paying to our future, indicated by our research and meeting discussions, underpins the claim that ours is a spread business dominated by the need to attain satisfactory interest margins while controlling expenses to avoid declining margins. Our environment is crowded with surprises. Two major multiline companies are abandoning the individual life business; a few life insurance companies have announced the discontinuance of universal life insurance sales; and an increasing number of prospective acquirors of life insurance companies require that those companies have no interest sensitive product lines. Other companies bemoan the passing of surplus relief treaties as a ready source of capital for acquiring new interest sensitive business. Some of these companies see direct debt financing as an attractive alternative. Still others are turning away from investing in new life insurance issues and are searching instead for ways to get into the funds management business. All this activity indicates a theme of reactions to risk in a volatile economy.

There are many changes occurring within our industry and our

profession to which we must react. I suggest that actuaries wishing to expand their investment-related expertise concentrate on the following:

1. The Life Insurance Business is a Funds Management Business.

It seems obvious that the Cannibal Life scenario is on its projected course. Even those avoiding it through product line limitations and market withdrawal are subject to its effects. A switch to registered products represents its ultimate acceptance.

2. Life Insurance Companies Will Continue to Diversify and Consolidate.

The prospect of further deregulation of the financial services industry has spurred a new wave of interest in diversification within the life insurance industry. In addition to mergers and acquisitions, consolidations are now taking the form of line of business divestitures and joint ventures. There is more interest in mutual company mergers, which will eventually lead to a wave of transactions. The number and total value of life insurance company mergers and acquisitions increased rapidly over the last three years, and activity levels in all industries since the beginning of the year indicate that the pattern will return.

3. Life Companies Will Increase Their Attention to Capital Management.

Access to growth capital is an increasing concern for most companies. They are avoiding growth opportunities such as the introduction of registered products because of their capital constraints. In the last few years the mushrooming concept of the financing subsidiary has been accepted by all but the smallest of companies. Capital allocation by company and product line is a central concern of most corporate officers.

4. Industry Focus on Volatile Financial Markets Will Increase.

Most actuarial research over the past few years has centered around the analysis of risks labeled C-1, C-2, C-3, and C-4. Much attention has been given to C-3, with C-4 picking up market share since October 1987. The researchers and regulators are gradually injecting volatility analysis into our craft. Fluctuating interest rate

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