

UNDERWRITING PROFITS NECESSARY  
TO KEEP PACE WITH THE  
INCREASING PREMIUM GROWTH  
FOR PROPERTY - CASUALTY COMPANIES

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Discussion by George E. Davis

The paper presents very clearly an accounting model which combines all the components of an insurance operation and allows one to quite easily compare the profitability of different situations.

The model is, in essence, an extension of the equation developed by Mr. Ferrari without the adjustment for equity in the unearned premium reserve.<sup>1</sup> His notation and equation was as follows:

- T - Total after-tax return to the insurer
- I - Investment gain or loss (after appropriate tax charges)
- U - Underwriting profit or loss (after appropriate tax charges)
- P - Premium income
- A - Total Assets
- R - Reserves and other liabilities
- S - Stockholders' equity

$$\frac{T}{S} = \frac{I}{A} (1 + R) + \frac{U}{P} \cdot \frac{P}{S}$$

Introducing a stockholder dividend (D) and adjustment to capital and surplus (C) and noting that  $S + R = A$  we get the author's formula for the new surplus level as follows:

$$1 + \frac{T-D+C}{S} = \frac{1+I}{A} \cdot \frac{A}{S} + \frac{U}{P} \cdot \frac{P-D+C}{S}$$

Any one of the terms can be derived by substituting values for the remaining terms.

The author uses his model to develop a 25% surplus growth, assuming a premium to surplus ratio of 3.0, assets to surplus of 4.9, return on assets of 5.1% after tax, dividends at 7% of surplus and C at 0. The resulting required underwriting profit is 4.5% of premium before tax, quite close to the "present average ratemaking formula for profit of 5%."

At this point, one must stop to consider the implications of this situation. With the policyholder providing a 4.5% underwriting margin the return on shareholder equity amounts to a handsome 32%, providing a 7% dividend and 25% growth in equity. Policyholders and regulators may or may not be willing to accept a 5% margin (the eighteen years' figures the author presents do not seem to support it) but, regardless, market forces would not long permit such a high return. Unless investments with similar risks are developing similar returns (which does not appear likely in the foreseeable future), investors would flock to an opportunity to reap a 32% return. With an influx of investors, the premium to surplus ratio would soon be lower and the total return would drop to a more normal level.

Alternatively, companies would cut prices to the point of developing, say, a 15% return on equity with confidence that additional capital could be raised as needed to support the additional growth. The historical results seem to support this. The 1965, 1971, and 1977 situations as presented in the paper developed returns on equity of only 10.1%, 8.9% and 11.2% respectively. The author notes the historical capital and surplus changes and the fact that they have been large over the last four years. These changes indicate the additional capital

added to provide the capacity for the industry as the premiums grew (and investment values faltered). Whether or not they will continue depends on whether or not the growth demand continues and the return to shareholders meets an appropriate level.

Given this perspective, the question that emerges as being most pertinent is "What is an appropriate level of return on owners' equity?" Without attempting to answer such a question in this review, we can develop alternatives to the author's conclusion. Using the 1977 situation as presented in the paper and assuming 15% is an appropriate return on owners' equity, the model indicates a pre-tax underwriting margin of 0.6% of premium is necessary to meet this return. As another possibility, taking the author's "future situation" and again assuming a 15% return on equity the derived level of required underwriting margin is a loss of 6.4%. This differs from the author's scenario only in that the policyholders are not expected to finance the entire growth of the company. In fact, surplus would increase by only 8% if return on equity is 15% and a dividend of 7% of equity is paid to the shareholders.

Policyholders must provide an adequate return on the equity supporting the underwriting but growth in surplus, if not met by normal retained earnings, must come from other sources, e.g., lower dividends, additional stock offerings, parent company contributions, etc. This may get to be a problem in a big mutual company because policyholders may not really feel that they own the company and be willing to finance its growth. In this case, mutual companies would have to bolster surplus by such things as paying smaller dividends and/or operating more economically than stock companies.

In conclusion, the author has presented a very clear model for quickly viewing the effects on surplus of different combinations of underwriting and investment return, dividend rates, etc. The model could be used not only for examining hypothetical situations; it could also be used to complete an insurance planning exercise by bringing in the total return right down to change in owners equity. To apply the model to derive necessary profit margins, however, would require careful selection of the values of several key parameters, especially the total return on owners equity and the ratio of premium to surplus. Obviously, the examples given above are just hypothetical situations and, in practice, consideration would have to be given to varying surplus by line, alternative investment strategies and tax considerations, etc. It may also be desirable to include, as the author suggests, some sort of contingency loading which could lead to the traditional profit and contingency loading.

1. J. Robert Ferrari, "The Relationship of Underwriting, Investment, Leverage, and Exposure to Total Return on Owners"

