Comments on Dickinson and Roberts *

by Philippe Van Namen **

It is well known that in the case of insurance companies the operating profit is derived from two sources :

— underwriting earnings, and

— investment income from the unearned premium reserve and the loss reserve.

That is, an operating profit can be satisfactory enough even if a negative technical result is observed provided that it is sufficiently counterbalanced by a positive financial result (see Ferrari [3], Joskow [4], Van Namen [8], Roy and Witt [9]).

This is in fact the question the Dickinson and Roberts paper is dealing with, although their paper is more narrow in focus. Specifically, their principal purpose is to demonstrate that, in period of inflation, the application of average is not able to make the negative implications of inflation on the technical result disappear.

To bring to light such a problem is especially to be applauded.

The quantitative analysis is comprehensive. However, I have some concern with the way this analysis is achieved. It is a well-known fact that fire insurance claims distribution can be approximated by way of a lognormal distribution (see Benckert [1], Ferrara [2], Lewalle [6]) and that, as soon as large losses are considered, the approximation can be improved by applying the Pareto distribution (Strauss [7]). For these reasons, it seems to this reader that it would be more appropriate to refer to these well-accepted and handy to use distribution functions.

The lack of empirical analysis, in order to verify the assumptions made, and especially the crucial one which states that partial losses are likely to grow at a faster rate than the total loss, is to be regretted. But I presume that it is due to a generally significant variable : the data required were not available.

Since it is the intention of the authors to develop the model, it should perhaps be helpful to dwell on the connected problem, mentioned earlier. Indeed, a by-product of this study is to raise the following questions : What about the financial result in period of inflation ? Is the rate of return on investment greater than the remaining rate of growth of claim costs after applying average ?

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A tentative to answer these questions may be found in a paper of Yehuda Kahane presented at the International Insurance Seminar which was held in Paris in July 80, and entitled " Insurance companies in an inflationary environment ". An earlier version of this paper appeared in the *Journal of Insurance* [5].

While Kahane's assumptions are criticable — he used a model based on Sharpe's Diagonal Model where the rate of profit on each insurance line is conceived as a linear function of a single common index : the inflation rate — the estimations he obtained (by means of a simple linear regression analysis) are particularly interesting, because counter to the common belief. It was found that inflation adversely affects the overall profit mainly through its negative relationship with the investment portfolio. That is, the existence of inflation could reduce the relative importance of lines with high fund generating coefficient and (or) the leverage, i.e. the premium/equity ratio, this reduction in turns resulting in capacity problems.

In addition to these comments, may I suggest that insurance might be one of the engines of inflation in that it can be an inducement to charge more (e.g., spiralling medical costs, automobile repairs, ...). But this has to do with moral hazard and the paper of Roland Eisen.

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