EDITORIAL AND ANNOUNCEMENTS

EDITORIAL

Actuaries of the Third Kind?

Actuarial science, at the time of its birth in the 17th century, was exclusively devoted to problems of life assurance: the correct evaluation of premium for annuities, pure endowments and whole life assurances. It was soon recognized that actuarial techniques were also needed for calculating reserves in order to ensure the sound financial management of organizations offering such services.

In this century — and in this development ASTIN has certainly played an essential role — actuaries have succeeded in getting their methods applied to non-life insurance also. This enlargement of actuarial activities was accompanied by the emergence of a new actuary, whom I might call the Actuary of the Second Kind. Contrary to his colleague of the First Kind in life assurance, whose methods were essentially deterministic, he had to master the skills of probabilistic thinking. IAA has to be congratulated on the fact that it managed to keep these two kinds of actuaries with such different philosphical bases, together under one roof. We all know how productive the interactions between life and non-life actuaries have proved to be.

At the moment, we are witnessing a new development, which I would call the emergence of the Actuary of the Third Kind. By this I mean a new group of mathematical experts who unfold their skills on the investment side of insurance or banking. Of course, actuaries have always contributed by applying their methods to investment activities — the Anglo-Saxons probably more than we Continentals — but if we ask ourselves how we typically tackle real life investment problems, we must confess that the scientific method boils in most cases down to straightforward compound interest calculations. On the investment side too we are geared to deterministic thinking, whereas it is obvious that in the real world financial yields are highly stochastic — actually more so than the mortality risk, for example.

It is fascinating to observe how the Actuaries of the Third Kind are right now in the process of creating a new scientific philosophy for handling investment problems. One of their ideas is quite obvious, namely to assume a stochastic interest rate. The second idea is ingenious: in order to understand it, we must recall the fact that e.g. for the mortality risk, insurance functions due to the independence of risks (or at least risk groups). The law of large numbers then automatically balances any sufficiently large portfolio. However, as soon as we think of the investment side in stochastic terms, we have a gigantic problem: investment risks are typically dependent and hence unbalanced. The answer to this problem — and here the Actuary of the Third Kind comes in — is: As there is

no mathematical law which automatically balances the investment risk *we must create artificial tools* for this purpose, namely options, futures, etc. This is, of course, an enormous task and the professionals needed for it must methodologically rely on quite advanced techniques. The probability background already essential to the Actuary of the Second Kind must be substantially enlarged for the professionals of the Third Kind. Such notions from the theory of stochastic processes as stochastic integration, Itô formula, Black Scholes formula must be at hand in the latters' tool kit.

What I describe here is not just an abstract professorial view of the world. The number of Actuaries of the Third Kind is increasing daily and a glance through a few financial journals also shows that they earn fantastic salaries. Again — as in the fifties when ASTIN was about to be created — IAA faces the problem of keeping the profession under one roof. This time the task may be even more difficult, as many Actuaries of the Third Kind are and will be employed outside the insurance industry. Nevertheless, I feel that we should make all efforts to understand the actuarial profession in as extensive a sense as possible. It should be the interaction forum of all professionals applying quantitative methods to financial and insurance risks of any kind. I therefore welcome the idea of a new financial working group within IAA as proposed by our French colleagues. Nevertheless, we must also recognize that — with the exception of a few colleagues like David Wilkie, Phelim Boyle, Elias Shiu, François Delavenne, Jacques Janssen etc. — most of us are somewhat late in recognizing these new developments. Is this a reason to resign and leave the initiative exclusively to the schools of finance and possibly to the accounting profession? I rather think that the actuarial profession now has an opportunity to prove its vigour by taking up the challenge!

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