

EDITORIAL

I have been a Co-editor of *ASTIN Bulletin* for seven years, with special responsibility for AFIR-type papers. I have now handed over this responsibility to Dr Andrew Cairns, of Heriot-Watt University, Edinburgh. My former Editor colleagues have asked me to write a valedictory editorial, and I have great pleasure in doing so.

The last seven years have seen the formation of AFIR, the subsection of the IAA for the *Actuarial Approach to Financial Risks*, for what Hans Bühlmann has called “actuaries of the third kind”. Five AFIR Colloquia have taken place, and by the time this is published, the sixth in Nürnberg, will also have happened. Each has been exiting and interesting.

The number of papers of an AFIR type submitted to the *ASTIN Bulletin* has not been large, and the number published has been smaller. There may be several reasons for this: *ASTIN Bulletin* may still be seen as a journal for non-life-insurance mathematics, rather than for investment mathematics; there are many other journals devoted to investment mathematics or financial economics to which authors may prefer to submit papers; and it takes time for there to be a sufficient body of actuarial experts in this field who can make their own specifically actuarial contribution.

The AFIR Colloquia are open to all those who are interested, including non-actuaries. This has been of enormous benefit to the actuaries attending, because it has opened their eyes to the great amount of academic and practical literature in the field. A substantial proportion of papers has been contributed by the non-actuaries, and they have improved the quality of our discussions. But, since they are not members of the IAA, nor of AFIR, they do not normally receive or read *ASTIN Bulletin*, and may not think to contribute papers to it.

I may sound pessimistic, but this would be wrong: a new journal takes time to grow. The experience of the AFIR Colloquia, and other meetings, such as those of individual AFIR groups or investment sections in individual countries, shows that a great deal is happening. Many actuaries are now familiar with the basics of financial economics: mean-variance optimisation and all its developments; stochastic models for describing assets, both continuous and discrete; the pricing of options and other derivative securities; and the mathematics of stochastic calculus, time series, stochastic optimisation, stochastic programming, α -stable (Lévy stable or stable Paretian or fractal) distributions, and other concepts which seven years ago were unknown, or seemed abstruse, difficult and irrelevant.

Actuarial education in several countries has also developed. Some of these topics have found their way into the formal education syllabuses of those actuarial associations that control their own educational programme (in North America, Australia and Britain, for example), and they may well have entered university actuarial syllabuses too. These developments have had the interesting effect of

pulling actuaries back from their comparative isolation into the mainstream of academic thought. A similar development has happened in the analysis of mortality statistics, and in the development of multi-state demographic models, such as models for AIDS, where actuaries have found themselves learning to talk the same language as other experts.

There are still die-hards. There are those who feel that actuaries should look after the liabilities, and others should concern themselves with the assets; there are those who are sceptical about the use of mathematical methods that they themselves do not understand; there are those who question some of the fundamental assumptions of, for example, utility theory or valuation using risk-neutral probabilities, and then attack the whole edifice when in my view they should see how the development would be changed if the basic assumptions were altered. But the continuing popularity of the AFIR Colloquia, and the high standard of papers presented, shows that the die-hards will not prevent the development of “actuaries of the third kind”.

On the other side, actuaries have begun to show that their traditional approach can also be of value in the world of financial economics. The concept that a risky enterprise needs risk capital (or solvency reserves) applies just as much to those who trade in derivatives as to insurance companies. Although reinsurance is not traded in the same sense as stock-exchange securities, many of the principles of a risk exchange to create an efficient portfolio of liabilities are similar, except that one wants a low mean cost of the liabilities (along with low variance or other risk measure), instead of a high mean return. Many insurance contracts contain implied options and can be valued using option-pricing principles and methodology. Not all securities are traded in a complete market (insurance contracts, reinsurance, pensions,...) is risk-neutral valuation principles may not apply, and one may need to consider utility-maximising principles. The list goes on.

Many problems are unsolved. Optimisation of investment objectives over multiple time periods can possibly be assisted by stochastic programming techniques, but these are very computer-intensive, and are not yet widespread; how to define the objective function to be optimised is not yet wholly clear. A reconciliation of continuous and discrete time-series models for investments remains incomplete; indeed there remains the argument between the theoretically nice concepts of efficient markets and rational expectations, and the empirically observed autoregressive models that may contradict the theories. There is the problem of how to optimise the investment strategy for a with-profits life insurance company, where the bonus distribution policy forms part of the strategy. And there may be the problem of how to construct an optimal investment strategy for the individual, taking into account all his/her assets and liabilities over his/her lifetime, most of which are not tradeable, or, like houses, are not infinitely divisible.

I look forward to many more numbers of *ASTIN Bulletin* containing AFIR-type papers, many more AFIR Colloquia, and continuing discussion with those who are interested in the application of financial economics within fields of interest to actuaries.

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