

EDITORIAL

ACTUARIAL EDUCATION AND RESEARCH: A PERSPECTIVE FROM DOWN UNDER

In a recent editorial in *Life and Pensions* magazine, in a discussion of issues in pension accounting and asset-liability management, the statement is made “Unfortunately, a legacy of the pension industry’s long slumber in actuarial dreamland...”. It is not only the pension actuaries who are accused of living in an actuarial dreamland. Recent events in loss reserving in the US, and more generally around the world, raised the same issue with non-life and casualty actuaries. Life actuaries face similar issues with new accounting and reporting standards. Is actuarial practice out of touch with modern developments in financial and risk management of financial service providers? Why do so many other professionals in the financial services industry have difficulties with concepts used in actuarial management?

In the editorial of the *North American Actuarial Journal* for January 2006, David Li states “Actuaries have been studying the default or ruin problem of a company for about a century, It is a bit unfortunate that little effort has been made so far to expand the scope of study on the ruin problem to a realistic company, to incorporate more economic factors into the framework, and to assess the model based on its effective prediction and assessment of default instead of on its mathematical beauty.” Is this another actuarial dreamland?

We all know of the proud history of actuarial science and actuarial research. Actuaries were pioneers in the development and application of survival models in the form of the life table applied to life insurance financial management. They were pioneers in the development and application of stochastic processes to non-life insurance risk and solvency. They were pioneers in pension fund modelling for multiple risks. They were pioneers in contract design for participating life insurance. The list could go on. Yes, we all know our proud history.

However most if not all of the disciplines in which actuaries were effectively innovators have been reinvented by other scientists, particularly academics in universities but also more recently highly technically trained graduates in industry once referred to as the “rocket scientists”. The same is happening in risk management for credit risk and operational risk. Financial engineers are developing and applying techniques for loss modelling in these areas that incorporate both actuarial and economic models.

These disciplines have blossomed without the need to draw on the developments of the actuarial profession. Very few of these disciplines know much about actuarial science or the early research developments of the profession. Biostatistics, epidemiology, stochastic processes, financial economics, mathematical finance, and modern risk management all have clear links to actuarial science. Yet it is the actuarial professional syllabus of the major international examining bodies, the Institute of Actuaries and the Society of Actuaries, that have been drawing on these other disciplines for up to date knowledge on the

foundations of the actuarial science discipline in the last 20 years or so. Even so, there has been a reluctance to incorporate these ideas into the foundation education of the next generation of actuaries.

There are countries that have relied on university education for professional actuarial education and these have had the most potential to maintain the currency of their syllabus and technical professional knowledge. It appears that some of these countries are moving to the model where an increasing component of actuarial education is determined by the profession.

The actuarial profession boasts many highly intelligent and innovative individuals. It has in the past and continues to do so to this day. It is not lack of intelligent entrants to the profession that is causing the current challenges to the profession. Generally actuaries are highly regarded in the financial services industry for their intelligence.

One of the reasons must be related to the education of actuaries particularly through the professional bodies after university. The professional exam process for the examining bodies such as the Institute of Actuaries and the Society of Actuaries are well known for being difficult to pass. By the end of the process those actuaries who succeed have often lost the desire to learn. The course material covered is obviously very appropriate for professional actuaries. It covers what actuaries need to know to practice as actuaries. There is no denying that this is what the profession must do. However the education and examination process that leaves so many very smart individuals struggling to succeed must be failing the profession.

So what is good about the professional education process? Recently the Institute of Actuaries introduced Specialist Technical courses as well as Specialist Applications courses. This is a useful step forward since it opens up the education of future practising actuaries to recent developments in the technical aspects of actuarial practice. What is missing is the development of a willingness to challenge existing approaches and to be willing to undertake research to modernise actuarial practice. This is something that universities usually consider as their role.

The Institute of Actuaries of Australia often is regarded as a role model for actuarial education at an international level. Most actuaries in Australia qualify by undertaking undergraduate education in Core Technical courses at university. They then undergo the professional courses to qualify as actuaries. There is no advanced technical courses covered in a university program and not very much specialist technical coverage in the professional practice based courses, the non-life insurance and the finance courses being more advanced in this area.

The technical syllabus is determined by the profession, contains a lot of mathematical topics with very limited institutional background or business motivation in terms of applications. Increased institutional background and business motivation and application would be beneficial. However there is also the need for more advanced level material after the core technical courses. This is best delivered in a university environment involving leading practitioners as well as research active academics that can draw on interdisciplinary research.

Are there really barriers to entry that will allow the actuarial profession to maintain its monopoly on the current professional roles that it enjoys? We must all be aware of very smart individuals in various roles in the financial services industry who could perform many of the tasks that actuaries currently perform and do this competently. Actuaries do not have a monopoly on the education required to perform quantitative risk analysis in the financial services industry.

Research is also fundamental to a discipline and actuarial science has a strong university based research capability and many practitioners contributing to the development of actuarial science. Recent assessments of actuarial science and insurance journals indicate that the ASTIN Bulletin is the leading actuarial science journal. The profession is capable of undertaking important research and contributing to the technical foundations of the discipline. Often this research is slow to be adopted by practitioners and slow in being included in the actuarial education syllabus. Postgraduate courses in universities do incorporate current research into their syllabus and provide the educational environment that encourages students to challenge conventional wisdom and to develop new and better approaches through the research process. The profession can benefit by engaging with universities, particularly in courses in advanced technical areas at postgraduate level and in also in their research programs.

Quantitative risk management is an interdisciplinary field and university programs in financial engineering and quantitative risk management provide an alternative education for entry into quantitative roles in the financial services industry. High quality graduate level programs at universities in financial engineering and quantitative risk management provide an education that will be attractive to students who may consider entering the actuarial profession.

Against this background the way forward for the actuarial profession will require the professional bodies to focus on the core practice areas and the professional training required in performing the function of actuary to insurance and pension funds. That is critical to the professional role of actuary. The actuarial profession is in the business of supporting and credentialing actuaries in their role as actuaries.

For advanced technical education and research the profession will benefit most by collaborating with universities including university programs in actuarial science, financial engineering and quantitative risk management. High quality graduate level university programs can provide continuing professional development for current members of the profession and provide a basis for entry into the profession. Research programs at universities can address fundamental problems of interest to the profession. Universities are in the business of advanced education at postgraduate level and in fundamental and applied research.

The actuarial professional education and research focus must be on ensuring it is not seen to be a profession living in an actuarial dreamland.

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