

Trevor Llanwarne (Government Actuary)

My experiences in Government and what this might mean for the actuaries of tomorrow, their training and how academics can add value

The talk will cover

1. Values, “soft skills” and “hard non-actuarial skills such as business skills and project management”
2. Cross-discipline research
3. Collaborative workshops
4. Knowledge-transfer and aggregation

Jens Perch Nielsen (Cass Business School) and Morten Schantz (Festina Lente)

Combining actuarial theory and practice with state-of-art IT with case studies in non-life as well as life

The current pension market is overly complicated and pensioners administration costs is a serious threat to the final pay out. Our rule of thumb is that a conservative guess is that most pensioners would have one third more in pension when actuaries and computer scientists together re-invent this area and cut the costs. Academic actuaries have the responsibility to develop new transparent and cost effective pension strategies, while the responsibility of the industry is to provide cost efficient IT and to provide capital for new and better players on the market. We will go through a case study on how such a new pension regime could like like. In non-life one of the more important duties of practical actuaries is to estimate the distribution of the future cash flow of outstanding liabilities. The role of the academic actuary is to develop efficient and simple mathematical models that are more transparent than the current chain ladder and Bornhutter-Ferguson type of models and the role of the industry is again to develop simple and transparent IT systems to make these new mathematical models available to practitioners for a reasonable price. We will go through a case study on how such new academic mathematical models could look like and how simple cost effective computer systems could be envisioned that support these models.

Kenneth Howse (University of Oxford, Institute of Ageing) and Ana Maria Madrigal (Hymans Robertson)

A case study in collaboration: Oxford Institute of Ageing and Club Vita

Kenneth and Ana Maria will talk about their (OIA & Club Vita) experience of collaboration – i.e. what they both expected to get out of it and how they have made it work etc. – rather than any particular set of research results.

Oliver Bettis (Great Lakes Reinsurance)

Risks to the economy arising from constrained global energy supply

During the last 5 years there have been two oil price spikes above \$100 a barrel. However, the overall volume of oil produced globally has been roughly flat during this period. There is a risk that this supply constraint might now be permanent. The link between economic growth and the oil supply is briefly examined, informed by a recent IMF publication which estimated oil and energy elasticities for both developed and developing nations. If economic growth depends on expanding the oil supply, then there is a risk that economic growth forecasts may not be fulfilled. Finally, if economic growth is constrained, the high level of debt in developed nations becomes more problematic.

María del Carmen Boado-Penas (Keele University)

Inheritance Gains in Notional Defined Contributions Accounts (NDCs)

The aim of this paper is to analyse whether a survivorship dividend (inheritance gains) should be included as an extra return in the notional rate of Notional Defined Contribution account systems (NDCs). The survivorship dividend, at a specific age, measures the portion of the accredited account balances of participants resulting from the distribution, on a birth cohort basis, of the account balances of participants who do not survive to retirement. We develop an actuarial model which takes account of the survivorship dividend. This allows us to estimate the effect that this has on the financial equilibrium of the NDC system. At the same time, with data from Sweden, Poland, Latvia and Italy, we estimate the effect, after the inclusion of the survivorship dividend, on the retirement pension of a representative individual. The main conclusions reached are first, that the survivorship dividend has a strong financial-actuarial basis which suggests that the aggregate contribution rate to apply is the same as the one accredited to the individual contributor. Secondly, in the countries that have not distributed the survivorship dividend this becomes a hidden way of accumulating financial reserves in order to compensate for the increase in longevity.

This is joint work with Carlos Vidal-Meliá.

Daniel Clarke (University of Oxford)

Insurance Design for Developing Countries

This talk will provide an overview of Daniel's recently completed DPhil thesis.

Over the last ten years there has been a renewed interest in providing agricultural insurance in developing countries. However, voluntary demand for unsubsidised insurance products has been low, particularly from the poorest farmers. Chapter One presents a model of rational demand for hedging products, where there is a risk of contractual nonperformance. The apparently low level of demand for consumer hedging instruments, particularly from the most risk averse, is explained as a rational response to deadweight costs and the risk of contractual nonperformance. A numerical example is presented which suggests that some of the unsubsidised weather derivatives currently being designed for and marketed to poor farmers may in fact be poor products. Chapter Two presents experimental evidence collected from a framed microinsurance lab experiment using poor subjects in rural Ethiopia, in which subjects bought 'too much' index insurance.

Chapter Three presents a vision of insurance design for the poor. Technically optimal arrangements involve insurance providers, such as microinsurers or governments, acting as reinsurer to groups of individuals who have access to cheap information about each other, such as extended families or members of close-knit communities, who in turn offer mutual insurance to each other.

Catherine Donnelly (Heriot-Watt University)

When is a defined-benefit pension scheme too small for self-insurance?

Many defined-benefit (DB) pension schemes have been closed not only to new entrants but also to future benefit accruals for existing members. With the closure of DB schemes to new entrants, even large DB schemes will have a declining number of members. We investigate the risks that a closed DB pension scheme is exposed to when there are only a small number of members, particularly with regard to the risks involved in self-insurance.

Colm Fitzgerald (Dublin City University and Paragon Research Ltd)

Risk Intelligence (RQ)

Actuaries are traditionally seen as highly skilled in relation to the logical and rational sides to managing risk. Research in the area of Risk Intelligence (RQ) is aiming to move actuaries up the value chain by producing research that would provide actuaries with skills in the management of the emotional, irrational and psychological sides to managing risk. Colm will discuss the concept of 'Risk Intelligence' along with the use of Risk Intelligence testing, and how actuaries can use this in the field of risk management.

Jethro Green (Financial Services Authority)

What every actuary should know about philosophy

The talk is about the links between philosophy and actuarial science - or rather 'what every actuary should know about philosophy'. Although this appears lighthearted, there is a serious message. The talk will be a quick introduction to the problem of induction (and the original 'black swan'), the problems of following a rule. As well as swans, ravens and turkeys, we'll meet along the way Hume, Mill and Wittgenstein, and an interesting problem from Hofstadter which touches upon computability and complexity theory. The upshot will be to get actuaries to think more deeply about what they are doing when they are carrying out a projection based on historical data, and whether there is really any hope or trust to be put in the actuarial motto 'experience foretells'.

Tony Hewitt (Imperial College)

Professional and business codes of ethical conduct – their relevance to actuarial education, research and practice

- bridging the gap between
 - the business world, particularly the finance industry
 - actuarial practitioners
 - other professions
 - academics
- serving the public interest – embedding this in education, research and practice

- behavioural economics – to what extent can codes of conduct and appropriate incentives influence behaviour
- the political dimension – public debate based on clear analysis and transparency – the best way to achieve necessary financial reforms globally?

Objective – to provoke debate; to potentially make changes in actuarial education and research protocols; ultimately to achieve global financial reforms.

Dalia Khalil (Cairo University)

The Actuarial Science Programme – An Egyptian model of Industry-Academia Partnership

Over the last decades, the actuarial profession bodies world- wide have been keen in developing the education system to meet the increasing demand for the professionals of this rare specialization in the financial markets, and to provide students with the strong skills required to analyze and solve financial problems. Realizing the importance of actuarial science area and its applications on business world, the well reputed international universities have been interested in including the actuarial science as a major in the academic programmes. Most of these universities adopt the courses that are designed by the professional bodies in the academic programmes in order to bridge the gap between academic studies and industry needs. Actuarial Science Programme was introduced at Cairo University in September, 1995. The programme was first of its kind in Egypt and the Arab world. The programme is considered a successful example of industry - academia partnership in Egypt. Furthermore, it is running in collaboration with Institute of Actuaries and well-reputed British universities. In this paper, the main objective is to present the Egyptian experience in actuarial science education. The partnership between the academic actuarial science programme and the industry will be explained thoroughly indicating the strengths and weaknesses of the programme. Moreover, a comprehensive evaluation of the programme will be conducted to identify the expectations of different stakeholders, and explore the methodologies that should be adopted to sustain and develop the actuarial science education in Egypt and MENA (Middle East and North Africa).

Kees van Schaik (University of Manchester)

Valuation with meromorphic Lévy processes

Meromorphic Levy processes as recently developed in [1] make up a large class of Levy processes with the very convenient property that their Wiener-Hopf factors are quite explicit. The class is large enough to allow for a zero or non-zero Gaussian part and a Levy measure that can be written as an (in)finite mixture of exponentials, and hence for a lot of modeling freedom. Yet the availability of their Wiener-Hopf factors firstly allows for using them in a recently developed so-called Wiener-Hopf Monte Carlo simulation method [2]. This simulation method considerably improves on the 'plain' Monte Carlo simulation method when quantities involving the running maximum of the process, or indeed first hitting times, overshoots etc. [3], are considered - as there are many examples in mathfinance and actuarial science. Already for Brownian motion the improvement is very significant. Secondly, an algorithm has been developed (a modification of Carr's Canadisation method) that allows for the pricing of American options in a market model driven by a meromorphic Levy process [4].

[1]: Meromorphic Levy processes and their fluctuation identities. Andreas Kyprianou, Alexey Kuznetsov & Juan Carlos Pardo. Submitted.

[2]: A Wiener-Hopf Monte Carlo simulation technique for Levy process. Andreas Kyprianou, Alexey Kuznetsov, Juan Carlos Pardo & KvS. To appear in The Annals of Applied Probability.

[3]: A note on extending the Wiener-Hopf Monte Carlo simulation technique for Levy process to hitting times and overshoots. KvS. In progress.

[4]: A variation of the Canadisation algorithm for optimal stopping with Levy processes. KvS. In progress.

Andrew Smith (Deloitte) and Ralph Frankland (Aviva)

Statistical Estimation: Connecting Theory to Regulation

The statistical theory of estimation gives precise meaning to concepts such as sufficiency, consistency, unbiasedness, efficiency, parsimony and robustness.

In the context of insurance solvency modelling, the European Insurance and Occupational Pensions Authority (EIOPA) demands the use of actuarial and statistical techniques that are: applicable, relevant, appropriate, transparent, up-to-date, detailed, parsimonious, robust and sensitive.

This paper, from members of the Actuarial Professions extreme events working party, links these sets of requirements, interpreting the legal regulatory language to established statistical concepts. These are illustrated with numerical examples of model calibration and testing.

This is joint work with Stuart Jarvis and John Kingdom