Joint ASTIN / CAS Seminar

Hosted by the Institute of Actuaries of Japan (IAJ)

November 23, 2019
Tokyo, Keidanren Kaikan (Japan Business Federation)

These workshops take place within the IAJ’s Special Meeting. The language of the Special Meeting is English.

No registration is required. And even better, admission is free! Any member of IAA Member Associations (either Full or Associate) can participate in this exciting event.

For the details, please click here to refer to the IAJ’s Special Meeting webpage.

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A Tractable Method for Unravelling and Modelling Unobservable or Complex Dependence Drivers with Granular Data, Bernard Wong (30 minutes)

Bio: Bernard Wong, PhD, FIAA, is Head of School, Risk and Actuarial Studies, at the University of New South Wales (Australia). Bernard is a Fellow of the Institute of Actuaries of Australia, a member of the Actuaries Institute Data Analytics Practice Committee, and serves on the Board of ASTIN. His current research interests span two main areas: modelling of insurance processes, optimal capitalisation policies for risk businesses, as well as the interaction between the aforementioned problems. His research has been recognised via the award of numerous prizes.

Abstract: The estimation of claim and premium reserves is a key component of an actuary’s role and plays a vital part of any insurance company’s operations. In practice, such calculations are complicated by the stochastic nature of the claims process as well as the impracticality of capturing all relevant and material drivers of the observed claims data. In the past, computation limitations have promoted the prevalence of simplified, but possibly sub-optimal, aggregate methodologies. However, in light of modern advances in processing power, it is viable to increase the granularity at which we analyse insurance datasets so that potentially useful information is not discarded. By utilising more granular data that is usually readily available to insurers, model results and predictions may become more accurate and precise.

Unfortunately, detailed analysis of large insurance data sets in this manner poses some unique challenges. Firstly, there is no standard framework to which practitioners can refer and it may be challenging to tractably integrate all modelled components into one comprehensive model. Secondly, computation requirements are a material concern when processing such large volumes of data. Finally, analysis at this greater level of detail requires more intense scrutiny as trends and drivers that were previously masked by aggregation may emerge. This is particularly an issue with claim drivers that are either unobservable or potentially useful information is not discarded. By utilising more granular data that is usually readily available to insurers, model results and predictions may become more accurate and precise.

We propose a Markov-modulated non-homogeneous Poisson model to overcome the above problems in the practical implementation of a detailed “micro-level” claim count model. We incorporate a flexible exposure measure to explicitly allow for known claim drivers while the hidden component of the Hidden Markov model captures the impact of unobservable or practically non-modellable information.

Theoretical findings are illustrated and validated in an empirical case study using Australian non-life insurance data in order to highlight the benefits of the proposed approach. This is joint work with Benjamin Avanzi, Greg Taylor, and Alan Xian.

Social Media Data and Catastrophe Warnings, Professor Zheng Su Jin (30 minutes)

Bio: Dr. Zheng is Doctor of Economics, Director of the Center for Risk Management Research, China Academy of Finance and Economics; Central University of Finance and Economics, Associate Professor; and Member of the China Association of Actuaries. 2010-2011 Visiting Scholar, Department of Mathematics and Accounting, Michigan State University. She studies at Beijing Normal University, Renmin University of China and Nankai University. 2010-2011 Visiting Scholar, Department of Mathematics and Accounting, Michigan State University. She studies at Beijing Normal University, Renmin University of China and Nankai University.

Abstract: Social networks are playing an increasingly important role as an early warning system, which will aid the rapid assessment of disaster and post-disaster reconstruction. First responders can use the streams of data generated by social media in addition to other information needed to estimate damage caused by an upcoming crisis event and implement future solutions. In this paper, we seek to answer the following questions: What kind of information combined with data mined from social network will lead to a more accurate result in terms of damage estimation? More specifically, is it geolocation or the data of capital loss? And what functions do social media serve in the early, middle and late stages of natural disasters respectively?
Session 2: Cyber Risk

Update on ASTIN Working Party on Cyber Risk, Eric Dal Moro (60 minutes)

Bio: Eric Dal Moro is Head of Group P&C Reserving at SCOR. Eric has over 20 years of experience in reserving and risk management. Prior to SCOR, he worked in the consulting industry both in Paris and Zurich, and also for AXA in France, Japan and Italy in different functions. He also gained some good experience in credit and surety pricing when working at Swiss Re. Eric has been serving as the Chairman of ASTIN Committee of the International Actuarial Association between 2014 and 2017 and is an active researcher within the global actuarial community.

Abstract: This presentation will provide an update on the ASTIN Working Party related to Cyber Risk. As cyber events have virtually no geographical limitations and can result in economic losses on a global scale, the assessment of return periods for such economic losses is currently debated among experts. The potential accumulation of consequential insurance losses is one of the major reasons why the (re-)insurance industry has limited risk appetite for cyber related risks. One way to increase the available cyber capacity of the risk transfer market and to achieve an additional atomization of this accumulation exposure are alternative risk transfer (ART) solutions involving the capital market via insurance linked securities (ILS), i.e. cyber cat bonds and parametric insurance and industry loss warranties (ILW). While indemnity triggered products already exist, index triggered ART solutions are currently “uncovered territory”. To achieve the participation of the capital market in index triggered ILS transactions, investors and insurers need to have confidence and full understanding of the composition of unbiased, reliable indices, based on transparent and robust IT security key performance indicators, parameters and metrics.

Goal of the working party
Identification together with IT security experts of a stable sets of measurable IT security key performance indicators of cyber events (malware campaigns, DDoS, spear phishing campaigns etc.) and correlate these with its economic impacts on the global, regional and local economy.

Cyber Insurance Risk Management, Michiel van der Wardt (30 minutes)

Bio: Michiel van der Wardt is a senior actuary and risk manager, with more than 25 years working experience. As free-lance actuarial risk manager, Michiel is providing actuarial and risk management services to insurance and reinsurance companies in Europe. Prior to his consulting work, Michiel has been working in various management functions within ING. Michiel is vice chairman of ASTIN since 2014.

Abstract: Cyber Risk is an increasing threat for many companies and individuals. Breaches occur more and more frequently and nobody can be sure his or her computer and data are safe. In order to protect our cyber environment, we have to go beyond risk awareness and data security towards cyber risk resilience. In his introduction Michiel will discuss some elements which can help to implement elements of cyber risk resilience in companies, where cyber insurance is only part of the solution.

Session 3: Insurance ERM and Solvency

ERM - Successes and Failures, Raymond Cheung (45 minutes)

Bio: Raymond Cheung brings more than eighteen years of experience in FinTech business strategy, actuarial and capital modeling, product development, merger and acquisition, credit ratings, fund management, as well as risk and compliance advisory roles. Raymond currently is an independent director for an SGX-listed entity, a director of a regulated remittance company, and the risk and strategy advisor to several InsurTech companies in Asia. Previously, he was the Regional Insurance Lead of Grab, and Chief Risk Officer for AIG Asia Pacific and Asia Capital Reinsurance Group. Raymond is an Associate Member of the Institute & Faculty of Actuaries (UK), and a Associate of the Singapore Actuarial Society.

Abstract: This session will track the development and maturity of ERM implementation – from merely a regulator-driven compliance model to a board-driven business excellence model. The presentation aims to cover the objectives and benefits of ERM, its development and trend over time from countries that have implemented ERM for several years, including success stories from the insurance industry as well as failures of ERM – and how to fix them. The presentation ends with a discussion of the future of ERM.
Insurance ERM – The Journey from Risk-Taking to Value Creation, Yuriy Krvavych

Bio: Yuriy Krvavych is a Managing Director within the EMEA Strategic Advisory of Guy Carpenter, with specific responsibility for the Risk and Capital Advisory offering. His main areas of focus cover a wide range of ERM advisory services including internal capital model development and model use in supporting strategic capital optimisation. Yuriy has over eighteen years of experience working in general insurance and has delivered a number of strategic risk and capital projects. Prior to joining Guy Carpenter, Yuriy was a Senior Manager at PwC’s Actuarial Services in London, UK providing consulting services to the Lloyd’s market and London company market in Enterprise Risk Management including Risk and Capital Modelling, Model Validation, Advanced Risk Analytics and Reporting, Capital Model Use and Solvency II. Prior to PwC, Yuriy worked at Insurance Australia Group (IAG) in Sydney, Australia as a DFA and Capital Modelling Manager responsible for providing actuarial consulting services to the Group and its subsidiaries. Prior to IAG, he worked at Hollard Insurance Australia where he led the actuarial function. He holds PhD in Mathematics from Kiev University and PhD in Actuarial Science from the University of New South Wales (Sydney). Author of several scientific publications, Yuriy is a frequent speaker at actuarial and mathematical conferences. He is also globally active in actuarial research and is currently serving on the ASTIN Board of the IAA.

Abstract: Insurers create value by taking risk and further managing it. When compared to conventional financial organisations, insurers have additional incentives to manage risk. This is due to the following fundamental differences between insurance and finance in terms of risk-taking and types of risk being dealt with:

• Insurance as a form of ‘risky debt’ – unlike typical financial organisations, insurers leverage themselves via issuing ‘risky debt’ in the form of insurance policies, here additional riskiness is associated with uncertainty around occurrence time and severity of insurance event; and

• Enhanced downside risk – insurance risks are more skewed towards downside and heavier in the tail when compared to financial risks.

This presentation covers a range of selected topics of Enterprise Risk Management (ERM) in insurance and discusses how insurers could efficiently use their ERM tools, internal models and related processes to navigate towards the optimal use of capital resources and enhanced shareholders value under various competing priorities / constraints including:

• maintaining solvency;
• maintaining resilience to financial distress;
• managing earnings volatility;
• fungibility and liquidity.