

28th International Congress on Insurance: Mathematics and Economics

Tartu, Estonia, on July 1-4, 2025

Programme (preliminary)
May 16th

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Programme

Tuesday, July 1st

18:00	Welcome reception at Delta
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Wednesday, July 2nd

KL : Keynote Lecture

PS : Parallel session

8:00	Registration is open		
	Opening		
9:30–10:30	KL	Phillip Yam <i>Hong Kong</i>	Keynote
10:30–11:00	Coffee break		
11:00–12:40	PS1	Room A Room B Room C Room D	Risk modeling I Mortality modeling I Climate risk I Statistical and machine learning I
12:40–14:00	Lunch break		
14:00–15:20	PS2	Room A Room B Room C Room D	Regulatory development Pensions and retirement I Finance and investment Statistical and machine learning II
15:20–15:40	Coffee break		
15:40–17:20	PS3	Room A Room B Room C Room D	Reinsurance and pricing Health insurance Climate risk II Advances in property and casualty insurance

Parallel Session 1

Wednesday 11:00–12:40, Room A, Risk modeling I

Chair: chair 1A	
Roger Laeven	Measuring financial resilience using backward stochastic differential equations
Samuel Gyamerah	Financial contagion and bank runs in interbank networks: stability and optimal control
Zinoviy Landsman	On Reducing Uncertainty in the Linear Regression using Minimum Variance Risk Functional with application to actuarial problems
Miguel Sordo	Probability equivalent level for CoVaR and VaR
Joseph J. Tien	Natural hedging on overseas investment of insurance companies: application for copula functions between interest rate and exchange rate

Wednesday 11:00–12:40, Room B, Mortality modeling I

Chair: chair 1B	
Fabio Viviano	Single and multi-population mortality models based on Linear Hypercubes
Michel Vellekoop	Minimum reversion in mortality models for multiple populations
Huiling Zheng	Fine-grained mortality forecasting with deep learning
Yin Yee Leong	Improving cluster detection for age-specific spatial mortality hotspots
I-Chien Liu	Mortality modeling comparison: using COVID-19 data

Wednesday 11:00–12:40, Room C, Climate risk I

Chair: chair 1C	
Yi-Fan Chen	Insurance decisions under the threat of natural disasters
Herve Zumbach	Classification of extreme rainfall events in Switzerland
Aleksandr Pak	On the insurance of environmental risks: modeling and pricing with mean-reverting regime-switching Lévy processes
Mulah Moriah	Spatiotemporal data integration framework for improved flood cost and occurrence modeling in house insurance

Wednesday 11:00–12:40, Room D, Statistical and machine learning I

Chair: chair 1D

Freek Holvoet	Multi-view spatial embeddings for insurance portfolio analytics
Yu Guo	Debiased lasso for m -dependent networks
Sixian Zhuang	Liquidity, exploration and inference-based learning to reduce transaction cost
Hong-Chih Huang	AI-driven investment strategies integrating ESG factors in pension fund management
Liivika Tee	Practical GenAI use cases in insurance analytics

Parallel Session 2

Wednesday 14:00–15:20, Room A, Regulatory development

<i>Chair: chair 2A</i>	
Zexiu He	Supervision intensity and tax avoidance behavior of property and casualty insurance companies: a game-theoretic analysis and quasi-natural experiment
Zhen Dong Chen	Value of Chapter 11 reorganization
Charlotte Jamotton	A multivariate energy distance approach to premium fairness adjustment
Joana Amorim	Rethinking actuarial education in a global world: the role of actuarial education companies

Wednesday 14:00–15:20, Room B, Pensions and retirement I

<i>Chair: chair 2B</i>	
Qixin Deng	Optimal investment–consumption and tax-favored private defined-contribution pension decision
Zhi Qiao	Optimal but unpopular? Designing pension incentives for delayed retirement across policymaker calculus and citizen cognition
Yung-Tsung Lee	Reverse mortgage pricing: a cross-country comparative study of product design
Sharon Yang	Evaluating the impact of multi-state health models and spousal dependency structures on reverse mortgage pricing
Mengyi Xu	Modeling multi-state health transitions with a most-recent-event Hawkes process

Wednesday 14:00–15:20, Room C, Finance and investment

<i>Chair: chair 2C</i>	
Hongjun Ha	Smith-Wilson yield curves via a macro-driven ultimate forward rate
Zuo Quan Xu	Optimal portfolio selection with VaR and portfolio insurance constraints under the rank-dependent expected utility theory
Shiqi Yan	Optimal asset allocation for a household with multi-claim insurance
Yevhen Havrylenko	Kihlstrom–Mirman preferences in continuous time: equilibrium control theory and applications to finance and insurance

Wednesday 14:00–15:20, Room D, Statistical and machine learning II

Chair: chair 2D

Roel Verbelen	A practitioner's guide to interpretable machine learning
Paul Wilsens	Machine learning in an expectation-maximisation framework for nowcasting
Christian Kleiber	Variable importance in generalized linear models – A unifying view using Shapley values
Hua Chen	Multivariate loss reserving with a data-driven binning strategy and generative moment matching network

Parallel Session 3

Wednesday 15:40–17:20, Room A, Reinsurance and pricing

Chair: chair 3A	
Tim Boonen	Moral hazard in insurance markets with distortion risk measure
Enej Kovač	Prioptions: An optional feature in an XL reinsurance treaty
Mai Zhang	Optimal insurance with two-dimensional adverse selection: risk exposure and probability distortion
Kelvin Tang	Optimal relativities in a Bonus-Malus System under frequency-severity dependence and different objective functions
Wei-Hua Tian	Mispricing and insolvency risk in property-liability insurance companies: a case study of Covid-19 pandemic insurance products

Wednesday 15:40–17:20, Room B, Health insurance

Chair: chair 3B	
Philipp Hornung	Disability model with individual and collective health claims
Valeria D'Amato	Joint estimation of multi-morbidity and socio-economic conditions for mortality projections
Laura Iveth Aburto Barrera	Cost dynamics of multimorbidity: modeling health insurance costs across disease combinations
Joakim Alderborn	Life and health insurance for a household with two members
Rosario Maggistro	Valuation of GLWB riders in variable annuities with accumulation phase and long-term care option

Wednesday 15:40–17:20, Room C, Climate risk II

Chair: chair 3C	
Stephane Loisel	Recommendations and challenges regarding the construction of climate change impact scenarios in health and life insurance
Nien-Hsuan Tang	How voluntary climate-related and ESG disclosures shape firm efficiency: evidence from Taiwan
Ryan Dai	Multi-regional integrated assessment under jump risk and uncertainty
Zhongyi Yuan	Why insurers price carbon low: An analysis of financed emissions and investment decisions
Despoina Makariou	A hybrid machine learning approach for carbon price forecasting

Wednesday 15:40–17:20, Room D, Advances in property and casualty insurance

Chair: chair 3D

Selim Gatti	Calibration bands for mean estimates within the exponential dispersion family
Tingdi Ren	The design of optimal insurance contracts: an approach of Lipschitz neural networks
Jae Youn Ahn	Interpretable generalized coefficient models integrating deep neural networks within a state-space framework for insurance credibility
Artur Tuttar	Amputation-imputation based generation of synthetic tabular data for ratemaking

Thursday, July 3rd

9:00–10:00	KL	Carmen Boado-Penas <i>Edinburgh</i>	Keynote
10:00–10:30	Coffee break		
10:30–12:10	PS4	Room A Room B Room C Room D	Risk modeling II Mortality modeling II Analysis of climate and other risks Artificial intelligence
12:10–13:30	Lunch break		
13:30–15:10	PS5	Room A Room B Room C Room D Room E	Risk modeling III Pensions and retirement II Technical innovations in insurance Ruin probabilities Life insurance: asset allocation
15:10–15:30	Coffee break		
15:30–17:30	PS6	Room A Room B Room C Room D Room E	Insurance economics and market behavior Long-term care Catastrophic and cyber risks Statistical modeling Developments in life insurance
19:00	Conference dinner at AHHAA		

Parallel Session 4

Thursday 10:30–12:10, Room A, Risk modeling II

<i>Chair: chair 4A</i>	
Marek Teuerle	On the ruin probability of insurer-reinsurer model for phase-type distributed losses
Yukio Muromachi	Simultaneous valuation of liabilities on a Markovian regime switching interest rate and default intensity model
Si Cheng Fong	Optimal subsampling and EM algorithms for non-Markovian semiparametric regression with interval-censored multi-state data
Marcin Szatkowski	One-year and ultimate correlations in dependent claims run-off triangles
Jiajun Liu	Extremes for tail-based gini risk variability measures with varying risk preferences

Thursday 10:30–12:10, Room B, Mortality modeling II

<i>Chair: chair 4B</i>	
Mindaugas Venckevičius	Several facts about Theodor Wittstein, Gaetano Balducci, and some expressions of the net single premiums under their mortality assumption
Torsten Kleinow	Drivers of mortality in Scotland
Jens Robben	Granular mortality modeling with temperature and epidemic shocks: a three-state regime-switching approach
Mark Van Lokeren	General bounds for functionals of the lifetime, compatible with life tables

Thursday 10:30–12:10, Room C, Analysis of climate and other risks

<i>Chair: chair 4C</i>	
Kwangmin Jung	Insurance stress testing of climate change risk: The case of the Korean general insurance Industry
Yanfeng Li	Dynamic financial analysis (DFA) of general insurers under climate change
Daniel Nkameni	Parametric insurance under solvency and acceptability constraints
Simona Jokubauskienė	Multivariate Hipp-type compound Poisson approximations for lattice distributions
Hassan Abdelrahman	Simplifying complexities in IBNR claims count estimation

Thursday 10:30–12:10, Room D, Artificial intelligence

Chair: chair 4D

Jing Zou	Dynamic hierarchical graph neural networks for spatiotemporal prediction of flood-related claims
Qing Cong	Reinforcement learning of equilibrium investment strategy with delay effects
Salvatore Scognamiglio	The credibility transformer
Lluis Bermudez	A data-driven xAI approach to surrender risk management
Liyitong Bi	Reputation effect of regulatory sanctions: empirical evidence from China's insurance industry

Parallel Session 5

Thursday 13:30–15:10, Room A, Risk modeling III

Chair: chair 5A	
Martynas Manstavičius	From aggregation functions to concordance measures
Weiran Li	Extremes of extended tail Gini functionals with application in systemic risk variability control
Renata Alcoforado	Risk model with dependent frequency and severity for liability and housing insurance
Yongzhao Chen	On the diversification effect in Solvency II for extremely dependent risks
Runhuan Feng	Capital-allocation-induced risk sharing

Thursday 13:30–15:10, Room B, Pensions and retirement I

Chair: chair 2B	
Nana Ding	Challenges of China's pension system and potential solutions
Haoxuan Jiao	The original intention of transitional pensions and the solution to the problem of "pillar I dominance in basic pension insurance"
Jingwen Zhang	The pension dilemma: financial sustainability versus inter-generational equity
Luke Servat	Optimal investment for retirement with intergenerational benchmarking

Thursday 13:30–15:10, Room C, Technical innovations in insurance

Chair: chair 5C	
Honggeng Li	The impact of insurtech on the performance of insurance companies: evidence from the Chinese market
Arnold Shapiro	The technical concepts and training approaches that power GPT models
Pierre-O Goffard	Collaborative and parametric insurance on the Ethereum blockchain
Xindi Fang	Using self-assessment data in automobile insurance risk assessment with dynamic modelling
Juan Sebastian Yanez	How does granularity affect motor insurance claim predictions in a telematics setting?

Thursday 13:30–15:10, Room D, Ruin probabilities

Chair: chair 5D

Oscar Peralta	Hybrid risk processes: a robust framework for modern ruin problems
Wei Zhu	Explicit ruin probability expressions via integro-differential equations
Zbigniew Palmowski	Fluctuations of Omega-killed level-dependent spectrally negative Lévy processes and the probability of bankruptcy
Ruizhe Bu	Numerical analysis of ultimate ruin probability in q-scale function under a Markov-modulated jump-diffusion risk model with hyperexponential jumps
Jamsher Ali	Quantized claims in approximate calculation of ruin probability: a stability result

Thursday 13:30–15:10, Room E, Life insurance: asset allocation

Chair: chair 5E

Siyu Chen	Optimal asset allocation for households with healthcare and insurance
Sander Van Eekelen	Optimal benefits, taxation, and asset allocation for a PAYG system with reserve fund under equity, longevity, and unemployment risks
Gabriele Stabile	On variable annuities with surrender charges
Hailiang Yang	Optimizing portfolios with surrender variable annuities: a deep reinforcement learning approach
Ko-Lun Kung	An analysis of the impact of liquidity premium estimation on the reserves of Taiwan's life insurance companies

Parallel Session 6

Thursday 15:30–17:30, Room A, Insurance economics and market behavior

<i>Chair: chair 6A</i>	
Hangsuck Lee	Optimal deductible to control the loss frequency
Fotios Mourdoukoutas	Competitive insurance pricing in a duopoly
Lingjia Yan	Research on the stock price differences of cross-listed companies – taking China Life A+H+N shares as an example
Rita Norbutaitė	Tennis model in betting: Grand Slam analysis
Mengjia Qi	Disentangling risk and time for optimal prevention

Thursday 15:30–17:30, Room B, Long-term care

<i>Chair: chair 6B</i>	
Lucien Lorenz	On the Determinants of long-term care intensity and duration in Switzerland: New insights from random forests modeling
Shuqi Lin	Research on long-term care insurance enrollment decisions and demand stratification in China based on deep learning
Yuanbo Feng	Long-term care insurance pricing: an ensemble learning and non-homogeneous Markov chain approach
Hua Zhao	The impact of wealth shocks on elderly health: Evidence from the China Health and Retirement Longitudinal Study
Jeffrey Tsai	Meta analysis of physical activity intensity and all-cause mortality: pricing of wellness incentive insurance policy

Thursday 15:30–17:30, Room C, Catastrophic and cyber risks

<i>Chair: chair 6C</i>	
Manuel Guerra	A Bayesian approach to catastrophic risks
Krzysztof Burnecki	Construction and pricing of multi-region CoCoCat bonds
Jakob Bloch	A dynamic premium calculation principle when tail risk is unknown
Yiying Zhang	Interplay of prevention efforts and insurance demand with distortion risk measures
Xinyi Wang	Optimization of credit contracts with incomplete information: equilibrium and welfare analysis Statistical and machine learning applications in insurance.
Raj Bahl	Pricing the priceless cloud insurance: an expected utility perspective

Thursday 15:30–17:30, Room D, Statistical modeling

<i>Chair: chair 6D</i>	
Ziwei Chen	Shrinkage GLM modelling
Liang Hong	Finite-sample valid prediction of future insurance claims in the regression problem
Vytaras Brazauskas	Quantile least squares for robust-efficient fitting and validation of loss models
Emilio Luis Sáenz Guillén	Non-parametric free-knot spline density and distribution estimation for heavy-tailed data
Chudamani Poudyal	Robust L -estimation of claim severity models: A flexible weighting approach
Georgios Pitselis	Credible distribution estimation with deductible, policy limit and reinsurance layers

Thursday 15:30–17:30, Room E, Developments in life insurance

<i>Chair: chair 6E</i>	
An Chen	Optimal consumption under smooth ambiguity
Peixin Liu	Life cycle investment under return ambiguity
Zhaoyi Wang	The impact of standard transition on the new business value of life insurance products a comparative study
Oytun Hacariz	On technical bases and surplus in life insurance

Friday, July 4th

9:00–10:00	KL	Łukasz Delong Warsaw	Keynote
10:00–10:30	Coffee break		
10:30–12:10	PS7	Room A	Dividend and investment analysis
		Room B	Pensions and retirement III
		Room C	Quantitative finance
		Room D	Dependence modeling
12:15–12:30	Closing		
12:30–13:30	Lunch		

Parallel Session 7

Thursday 10:30–12:10, Room A, Dividend and investment analysis

Chair: chair 7A	
Julia Eisenberg	Lump sum dividends for a mean-avoiding Ornstein-Uhlenbeck process: explicit solutions
Fabio Colpo	Optimal dividends for an insurance company with an Ornstein-Uhlenbeck surplus
Pertiny Wilfried Nkuize Ketchiekmen	Optimal investment and entropy-regularized learning under stochastic volatility models with portfolio constraints
Shang-Yin Yang	Optimal consumption and investment problem incorporating the housing habits and the household's subjective beliefs
Sliem El Ela	Human capital and inflation risk in lifecycle investment strategies

Thursday 10:30–12:10, Room B, Pensions and retirement III

Chair: chair 7B	
Hamza Hanbali	Early pension withdrawals and homeownership
Jinhui Zhang	Superannuation and longevity risk: ensuring retirement preparedness
Yitian Xu	Longevity bond pricing in pension with positive jumps
Iqbal Owadally	Life-cycle investment under subjective survival beliefs with deferred annuities, housing and home equity release

Thursday 10:30–12:10, Room C, Quantitative finance

Chair: chair 7C

Yuhao Liu	Pricing credit default swaps under central clearing
Axel Aranedo	Consistent option-implied risk measures
Tahir Choulli	Log-optimal portfolio under regime switching mechanisms
Zhanyi Jiao	Testing mean and variance by e-processes with applications in finance
Jayen Tan	Memory in temperature and its impacts on weather insurance and derivatives under a fractional Ornstein-Uhlenbeck process

Thursday 10:30–12:10, Room D, Dependence modeling

Chair: chair 7D

Charalampos Passalidis	Multivariate strong subexponential distributions: properties and applications
Dimitrios Konstantinides	Heavy-tailed random vectors: theory and applications
Oskar Laverny	Non-parametric estimation of net survival under dependence between death causes
Jorge Yslas	Phase-type frailty models: A flexible approach to modeling unobserved heterogeneity in survival analysis
Woongchae Yoo	Statistical learning of trade credit insurance network data with applications to ratemaking and reserving