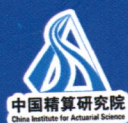


庆祝中央财经大学建校七十五周年
中国精算研究院获批教育部人文社科重点研究基地二十周年

第二届精算、量化金融与风险管理国际会议

The 2nd International Conference on Actuarial Science, Quantitative Finance and Risk Management

会议手册



July 15-17, 2024 Beijing, China
2024.7.15-17 中国·北京

主办单位：中央财经大学中国精算研究院、保险学院

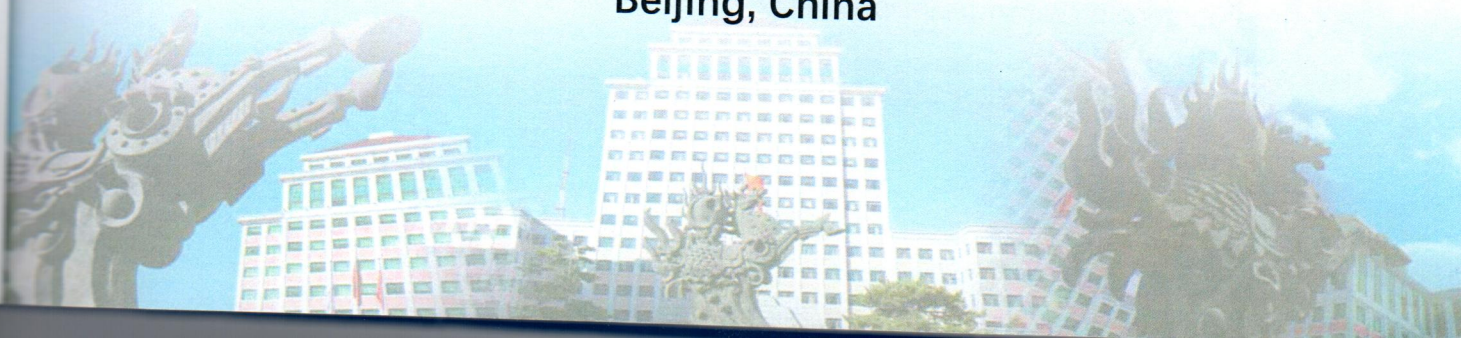
第二届精算、量化金融与风险管理国际会议

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Science, Quantitative Finance and Risk Management

Conference Manual

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Conference Agenda

Monday, July 15, Afternoon 15:00-18:00					
Registration		Room 202, North Building, Academic Hall			
Tuesday, July 16, Morning		Room 202, Academic Hall			
8:00-10:00	Registration	Outside Room 202			
8:30-8:45	Photo	Outside Academic Hall			
8:45-9:15	Opening Ceremony Haitao Ma <i>President, Central University of Finance and Economics</i> Lin Yang <i>Director of Education and Examination, China Association of Actuaries</i> Steve Zhang <i>CEO, Life & Health Greater China Munich Re</i>				Moderator: Hua Zhou
	9:15-10:00	Plenary Speaker: Zengjing Chen Title: Some advance in non-IID problem study			
10:00-10:30	Tea break	Outside Room 202			
10:30-11:15	Plenary Speaker: Liang Peng Title: Nonstandard inference for mortality models and momentum trade				Moderator: Sujin Zheng
11:15-12:00	Plenary Speaker: Carole Bernard Title: Tontines as a tool for wealth management				
12:10-13:20	Lunch	Teacher Dining Room(教师餐厅), CUFE			
Tuesday, July 16, Afternoon		Academic Hall			
13:30-15:30	Parallel Session 1				
Theme	Optimal (Re)insurance (I)	Longevity Risk	Risk Management (I)	Insurance Economics (I)	Quantitative Finance (I)
Room	202	603	604	702	706
Moderator	Sheng Chao Zhuang	Zhengtang Zhao	Haiyan Liu	Hua Chen	Xiao Wei
13:30-14:00	Tim Boonen	Hong Li	Vali Asimit	Hua Chen	Oleg Kudriavtsev
14:00-14:30	Yiyang Zhang	Chenlu Deng	Fan Yang	Jian Zhang	Jiaqin Wei
14:30-15:00	Guo Liu	Jianjie Shi	Tong Pu	Zhi Qiao	Gongqiu Zhang
15:00-15:30	Tao Hu	Adam Shao	Shuyu Gong	Daning Bi	Kun Xu

Invited Speakers

Vali Asimit: Dr. Asimit is a Professor in Actuarial Analytics at Bayes Business School, City, University of London. He joined Bayes Business School (formerly Cass) in January 2011 and has been a Professor in Actuarial Analytics since 2019. He had worked as a non-life actuary for three years at Allianz and Vienna Insurance Group. He has been providing consulting support to government bodies such as Government Actuary's Department and NHS Resolution, but also to private institutions such as Moody's for their global physical risk modelling system, a product known as Climate on Demand Pro. He is an Associate Editor of the Insurance: Mathematics and Economics journal. He received the 2010 Fortis Award for the best Insurance: Mathematics and Economics (IME) journal paper presented at the 14th International Congress of IME.

Talk Title: Risk Budgeting under General Risk Measures

Abstract: We provide a mathematical characterization for risk parity/budgeting portfolios with general risk preferences for long-only as well as for long-short portfolios. Our main results generalize existing results available for particular risk measures. The existence and uniqueness of a solution to the risk budgeting problem (when the long/short positions are pre-specified) are discussed for any convex and homogeneous risk preferences. We show that under some general conditions, long-only RP portfolios are less risky than the equal weighting benchmark portfolio for a general risk measure, but we find a counterexample when the main regularity condition is not satisfied. For the general class of assets returns that are elliptically distributed, an invariance property (among shift invariant risk measures) of the parity/budgeting portfolios is proved. Multiple examples are provided to explain the possible limitations of the well-known logarithmic barrier formulation that is usually applied to compute risk budgeting or risk parity portfolios solutions. It is shown that the logarithmic barrier formulation may not always be able to identify all risk budgeting and risk parity portfolios.

Alexandru Badescu: Dr. Badescu is a Professor of Actuarial Science and Mathematical Finance with the Department of Mathematics and Statistics at the University of Calgary. During 2013-14, he held a visiting Associate Professor position at the University of Quebec at Montreal. Dr. Badescu has published consistently, across a range of fields (primarily Actuarial Science, Mathematical Finance, and Financial Econometrics), in high quality journals such as, Journal of Short Biography

from the previous year. The value of the transition coefficient ranges from 1% to 1.4%.

According to data published by the Ministry of Finance, the funding shortfall for the public pension for enterprise employees has been increasing year by year, with financial subsidies growing from 971 billion yuan in 2006 to 7106 billion yuan in 2022. This paper will calculate the basic pension and transitional pension expenditures corresponding to the deemed payment periods for each year from 2006 to 2022. By comparing these expenditures with the financial subsidies provided in each year, the paper will examine whether there is any double counting in the pensions corresponding to the deemed payment periods.

Oleg Kudriavtsev: Dr. Kudriavtsev is the Head of the Department of Computer Science and Customs Technologies at the Rostov Branch of Russian Customs Academy and Professor at the Institute of Mathematics, Mechanics and Computer Science of Southern Federal University and Research Director at InWise Systems, LLC. He is an expert in Computational Finance and Applied Mathematics, a member of the international research group MathRisk. Oleg Kudriavtsev holds a Degree of Doctor of Science in Physics and Mathematics (Russian analog of Habilitation Degree) from Central Economics and Mathematics Institute of Russian Academy of Science, (Moscow, Russia). The field of his research interests includes the development of fast and efficient computational algorithms for pricing path-dependent options and risk estimation in models admitting jumps (numerical Wiener-Hopf factorization, Monte Carlo methods, finite difference schemes, integral transform methods).

Talk Title: Pricing Double Barrier Options under Levy Processes with Jumps of Unbounded Variation

Abstract: We propose a new approach for pricing double barrier options under pure non-Gaussian Levy processes admitting jumps of unbounded variation. The main algorithm consists of the recurrent calculation of the sufficient simple expectations of the intermediate price function depending on the position of the extremum of spectrally positive or negative part of the underlying Levy process at a randomized time moment. It corresponds to a sequence of problems for integrodifferential equations on an interval, each of which is solved semi-explicitly by the Wiener-Hopf method. The main advantage of the suggested method is that being very simple for programming it makes it possible to avoid dealing with Wiener-Hopf matrix factorization or solving systems of coupled nontrivial Wiener-Hopf equations that require application of tricky approximate

factorization formulas. The performance of the method is illustrated with numerical examples. This work is supported by Russian Science Foundation Grant No. 23-21-00474.

Yongzeng Lai: Dr. Lai is a full professor at the Department of Mathematics, Wilfrid Laurier University, Waterloo, Ontario, Canada. He received a bachelor's degree and a master's degree from the Department of Mathematics, Sun Yat-Sen University in 1983 and 1988, respectively, and his Ph. D degree from The Claremont Graduate University, Claremont, California, USA, in January 2000. From May 2000 to June 2002, he was a postdoctoral fellow at the Center for Advanced Financial Research and Statistics and Actuarial Science at the University of Waterloo, Canada. Since July 2002, he has been working at Wilfrid Laurier University. His main research areas include financial mathematics (pricing and risk management of derivatives, computational finance, portfolio optimization, applications of stochastic analysis in finance and insurance), applications of differential equations in finance and economics, Monte Carlo and Quasi-Monte Carlo Simulation Methods and Applications, Application of Machine Learning Methods in Economics and Finance. He has published over 60 articles in refereed journals such as *Automatica*, *Computers & Operations Research*, *Economic Modeling*, *Expert Systems with Applications*, *Finance Research Letters*, *Insurance Mathematics and Economics*, *Journal of Computational Finance*, *Nature - Humanities and Social Sciences Communications*, *North American Journal of Finance and Economics*, *Nonlinear Analysis*, *Resources Policy*, etc. He held the National Science and Engineering Research Council (NSERC, equivalent to NSF in the USA and NNSF in China) Discovery Grant for many years since 2003. From July 2020 to June 2023, he served as a Member of the NSERC Discovery Grant Evaluation Group for Mathematics and Statistics. He is an associate editor of two academic journals and a reviewer for more than 40 journals.

Talk Title: Crude Oil Futures Price Forecasting based on VMD-EMD-Transformer Model

Abstract: Crude oil is a raw, natural, but nonrenewable resource. It is one of the world's most important commodities, and its price can have ripple effects through the broader economy. Prediction of crude oil prices plays a crucial role in the investment of crude oil and remains challenging. Due to the deficiencies neglecting residual factors when forecasting using conventional combination models, such as the autoregressive moving average and the long short-term memory for prediction, the variational mode decomposition (VMD)-empirical mode decomposition (EMD)-Transformer model is proposed to predict the crude oil prices in this study. This model integrates a