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Editorial

Special Issue "Interplay Between Financial and Actuarial Mathematics II"

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Dear Reader,

In this editorial, we provide a short overview of this Special Issue and classify the papers according to their theoretical results rather than their applied contributions. We sincerely hope that this piques your interest and curiosity to read the full-length papers when published.

After the successful first edition of this Special Issue "Interplay Between Insurance and Finance", we decided to start a second edition "Interplay Between Insurance and Finance II" with the main focus on the comprehensive understanding of risk management in insurance, including but not limited to the following topics: pricing strategies, capital allocation, and decision-making processes, etc.

Now that this Special Issue has been closed, we can proudly say that it presents thorough and diverse investigations into theoretical developments and practical applications within the realm of insurance.

"Interplay Between Insurance and Finance II" presents various facets of actuarial risk management, investigating ruin probabilities, solvency implications, and reinsurance strategies. Techniques such as maximum pseudo-likelihood estimation, Laplace transforms, and Markov chains are employed to derive bounds, estimate parameters, and simulate outcomes. The studies underscore the intricate interplay between risk factors, dependence structures, and financial dynamics within the insurance industry.

On the theoretical front, studies such as "Bounds for the Ruin Probability in the Sparre-Andersen Model" and "Some Stochastic Orders over an Interval with Applications" contribute to further developing the mathematics of risk assessment. These papers establish bounds for ruin probabilities and explore stochastic orders related to heavy-tailed distributions, which is relevant in insurance risk management. In parallel, through the concept of Parisian ruin, "A Note on a Modified Parisian Ruin Concept" offers an alternative perspective to some risk mitigation strategies. Additionally, "Recursive Approaches for Multi-Layer Dividend Strategies in a Phase-Type Renewal Risk Model" analyzes complex risk models with multi-layer dividend strategies, evaluating risk management strategies in dynamic insurance environments. "Asymptotic Expected Utility of Dividend Payments in a Classical Collective Risk Process" looks at utility functions—power and logarithmic utilities—in the framework of the dividend maximization of an insurance business surplus modeled by a Cramér–Lundberg process.

Moving from theory to practice, "Maximum Pseudo-Likelihood Estimation of Copula Models and Moments of Order Statistics" applies statistical methods to real-world data, aiming to accurately capture the dependence structure in portfolios.

In summary, this Special Issue presents a collection of studies on the theoretical framework of insurance/financial risk management and its practical applications. The research in this Special Issue aims to bridge the gap between insurance and finance to better

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inform decision-making processes, enhance risk mitigation strategies, and ultimately foster resilience within the insurance industry.

Conflicts of Interest: The authors declare no conflicts of interest.

List of Contributions

Theoretical Contributions:

1. Offers insights into ruin probability by discussing upper and lower bounds in Sparre-Andersen insurance risk models:
(Losidis and Dermitzakis 2024) Losidis, Sotirios, and Vaios Dermitzakis. 2024. Bounds for the Ruin Probability in the Sparre—Andersen Model. *Risks* 12: 28. https://doi.org/10.3390/risks12020028.
2. Explores stochastic orders related to the Laplace transform and applies them to derive bounds for heavy-tailed distributions:
(Kanellopoulos 2023) Kanellopoulos, Lazaros. 2023. Some Stochastic Orders over an Interval with Applications. *Risks* 11: 161. https://doi.org/10.3390/risks11090161.
3. Investigates the asymptotic behaviour of the expected utility of the dividend payments for power and logarithmic utility functions in collective insurance portfolios:
(Baran et al. 2023) Baran, Sebastian, Corina Constantinescu, and Zbigniew Palmowski. 2023. Asymptotic Expected Utility of Dividend Payments in a Classical Collective Risk Process. *Risks* 11: 64. https://doi.org/10.3390/risks11040064.
4. Proposes risk assessment through a modified Parisian ruin concept:
(Cheung and Wong 2023) Cheung, Eric C. K., and Jeff T. Y. Wong. 2023. A Note on a Modified Parisian Ruin Concept. *Risks* 11: 56. https://doi.org/10.3390/risks11030056.
5. Presents innovative techniques for analyzing risk models with multi-layer dividend strategies for insurance risk management:
(Papaioannou and Ramsden 2023) Papaioannou, Apostolos D., and Lewis Ramsden. 2023. Recursive Approaches for Multi-Layer Dividend Strategies in a Phase-Type Renewal Risk Model. *Risks* 11: 1. https://doi.org/10.3390/risks11010001.

Practical Application:

1. Addresses challenges in capturing dependence structures:
(Dias 2024) Dias, Alexandra. 2024. Maximum Pseudo-Likelihood Estimation of Copula Models and Moments of Order Statistics. *Risks* 12: 15. https://doi.org/10.3390/risks12010015.