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NUMERICAL METHODS FOR LAMBDA QUANTILES: ROBUST EVALUATION AND PORTFOLIO OPTIMIZATION

(Joint with Linus Wunderlich)

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TOPIC

Lambda quantiles, originally introduced as lambda value at risk, generalise the classical value at risk by allowing for a variable confidence level. In this article, we examine their numerical properties. We begin by developing a globally convergent Newton-based algorithm for evaluating lambda quantiles, named Λ-Newton-Bis. We prove convergence under mild assumptions, including cases with discontinuities, and local convergence under stronger local regularity conditions. Additionally, we consider an optimal portfolio allocation problem using lambda quantiles, proposing two alternative solution approaches based on the Λ-Newton-Bis algorithm. Several examples compare the performance of the two approaches and confirm the numerical efficiency of Λ-Newton-Bis.

BIO OF ILARIA PERI

Ilaria Peri is a lecturer in mathematical finance at the Birkbeck University of London. She earned her doctorate from the University of Milan-Bicocca under the supervision of Marco Frittelli. Prior to joining academics, she worked as a financial consultant gaining experience in risk management and banking operations. Her research focuses on risk measures' theory and applications. Her major contribution is the introduction of the generalized quantile called Lambda value at risk on which she has been conducting theoretical studies and empirical applications. Her research has been published in internationally recognized journals and presented at invited seminars in academic and professional contexts, including regulatory authorities.

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