



A bird's eye view on decision theory and mathematical finance: a tribute to the legacy of Erio Castagnoli

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This special issue is a tribute to our teacher, coauthor, colleague, and friend **Erio Castagnoli** (Mantua, 1943 – Mantua, 2019), a towering figure in the fields of mathematical finance, decision theory, and applied mathematics. Over a career that spanned more than four decades, Professor Castagnoli influenced generations of students, scholars, and practitioners through his rigorous thinking, pedagogical clarity, and unrelenting intellectual curiosity. In his tenure as a faculty member at the Università di Parma and then at the Università Bocconi, he was a fundamental figure in the education of a large group of researchers and scholars, quite a few of which transitioned from the role of student into that of coauthor. This special issue celebrates his educational leadership, and is primarily (but not exclusively) devoted to papers written by his students or co-authors, or on topics affine to his research contributions.

Erio Castagnoli was a founding force behind the institutionalization of quantitative disciplines within economics and finance in Italy. His pivotal roles in shaping the AMASES, the journal that developed into *Decisions in Economics and Finance*, and more generally the field of Applied Mathematics, attest to his long-standing commitment to academic excellence. Beyond his institutional contributions, Castagnoli's

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work on decision analysis, risk evaluation, and capital budgeting has left a lasting imprint on both theory and practice.

The papers collected in this issue reflect not only the breadth of Erio's intellectual legacy but also the vibrant research community that he helped foster.

- The issue is opened by “*Erio Castagnoli: scientist, teacher, mentor and friend*” a biographical and scientific portrait of Erio, penned by Paola Modesti (student and co-author) and Lorenzo Peccati (long-time colleague and coauthor).
- The paper “*American options with acceleration clauses*” by Anna Battauz and Sara Staffolani investigates optimal stopping in contracts with path-dependent stochastic maturity—a sophisticated contribution to option theory that echoes the types of real-world complexity that Erio often encouraged his students to confront.
- In “*Multivariate risk attitude: a comparison of alternative approaches in sustainability policies*”, Francesca Beccacece explores contrasting forms of multivariate risk aversion, offering insights highly relevant to sustainability policy design. The paper develops notions of purely concave and purely multivariate risk aversion—concepts closely aligned with Erio's lifelong interest in decision-making under uncertainty.
- Marzia De Donno and Mario Menegatti contribute “*Preferences over risk changes in variance*”, which delves into higher-order risk preferences and their implications for precautionary saving—a topic of conceptual depth that aligns with Castagnoli's analytical rigor and focus on foundational modeling assumptions.
- Gianluca Fusai's paper, “*Monotonic transformation and recovering the implied stock price process*”, is both a technical contribution and a heartfelt tribute. Drawing inspiration from an unpublished manuscript by Castagnoli, it demonstrates the use of monotonic transformations of Brownian motion to recover implied stock dynamics from option prices—a beautifully simple yet powerful idea that typifies Castagnoli's style.
- Alessandro Sbuelz, in “*Equilibrium asset pricing with short rate risk*”, presents a tractable long-run risk equilibrium model. His analysis of effective duration under different preference specifications resonates with Castagnoli's fascination with the analytical underpinnings of asset pricing and dynamic modeling.
- Laura Ziani, Flavio Pressacco, and Paolo Serafini, in “*Risk management through proportional reinsurance: an efficient computational approach*”, present a fixed-point algorithm for optimal quota-share reinsurance that aligns with mean-variance efficiency—a methodologically elegant extension of the *defnettian* principles Castagnoli often emphasized in his teaching.
- Finally, Erio Castagnoli's posthumous co-authored paper with Gino Favero, “*A contribution to the NPV-IRR debate*”, reflects his deep and nuanced thinking about financial evaluation criteria. It reinterprets the internal rate of return not as a singular yield or cost, but as a set of thresholds relevant for decision-making under varying reference rates—an approach that captures his lifelong commitment to clarity in financial logic.

We are deeply grateful to the authors for their contributions, to the reviewers for their careful work, to Salvatore Greco and to the editorial board for their support in

making this issue a reality. Above all, we once again thank Erio Castagnoli—for his scholarship, mentorship, and enduring example.

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