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EDITORIAL

"Financial decision support": feature issue editorial

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Financial decisions are involved in a wide range of corporate activities and choices made by consumers. The context in which financial decisions are taken has changed drastically over the past decades, as several financial and technological innovations have created a lot of opportunities, as well as many challenges for financial managers, investors, and policy makers.

As a result, the level of sophistication of financial decision-making models has increased, but further advances are still required to match the deep complexities of the financial world. The increasing uncertainties call for better tools to assess and manage financial risks. Advanced methodologies for descriptive, predictive, and prescriptive modeling, capable of handling the vast volume of existing data (quantitative and qualitative), are also crucial for providing operational financial decision support. Finally, innovative tools are needed to consider the multi-faced nature of financial decisions, combining not only financial information, but also other relevant aspects, including social responsibility, business ethics, and corporate governance, among others.

Such issues are relevant for all types of financial decisions in corporate finance, investments and the financial markets. Moreover, financial decision-making problems should not be considered purely within the context of financial services (banks, insurance, investment funds), but also in the framework of non-financial sectors (industry, commerce, non-financial services), where financial decisions are an integral part of strategic and operational management.

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In the above context, this Feature Issue was prepared to cover different aspects of financial decision-making problems, from the perspective of operational modeling tools and methodologies in a decision-theoretic support context. The Feature Issue includes five papers that present the use of analytical decision-making approaches in various fields of financial decision support.

The Feature Issue starts with an overview paper on the nature of financial decision support, the developments in this area and the main recent trends. The overview discusses the importance of analytical modeling for financial decisions, presents the historical advances in different decision support technologies, and discusses the status and trends, in terms of methodological approaches and technological advances. Finally, the overview highlights the importance of considering financial decisions in a multidimensional context.

The second paper, by Salas-Molina, Ferre, and Rodriguez-Aguilar, introduces a modeling framework for cash management that integrates data-driven techniques with multi-objective decision-making. The former part relies on machine learning for deriving cash flow forecasts from historical data. These forecasts are used as inputs in a multi-objective model that takes into account risk and reward criteria, as well as cash-flow uncertainty.

In the third paper, Dash, Kajiji, and Vonella, also use machine learning techniques for financial decision-support. More specifically, the paper presents the application of data analytics for municipal bond trading. Using data for of investment grade US municipal bonds, different methods are compared, namely ridge regression, artificial neural networks, and support vector regression. An enhanced radial basis function artificial neural network is found to outperform the other techniques. Based on the results, a prescriptive decision process is proposed for bond trading.

The fourth paper, by Deluque and Shittu, develops a decision support framework for risk management in electricity generation infrastructure. Initially, portfolios of electricity generation technologies in US energy supply systems are evaluated using a risk–return (mean–variance) approach, which is a standard tool for portfolio selection and asset allocation. Moreover, the paper assesses the reliability of energy mix portfolios. The results lead to interesting insights that have direct policy making implications about the design of energy systems.

The paper closes with the paper by Nishihara, which presents a decision-making model for R&D investments, based on the real options framework. The model considers three types of uncertainty, including uncertainty of research duration and costs, market value of technology, and a competitor's technology development. Analytical solutions are derived, and the analysis of the model leads to insights about the impact that such uncertainties have on R&D investment decisions.

Closing this editorial, we should express our sincere thanks to the authors whose contributions have been essential in completing this Feature Issue. We should also acknowledge the support of all reviewers who devoted considerable time to provide critical evaluations, insightful comments, and constructive suggestions for the submitted papers. Without their help it would be impossible to achieve this issue's high standards. Finally, we are grateful to the Editor-in-Chief of the EURO Journal on Decision Processes, Prof. Vincent Mousseau, for his interest in preparing this Feature Issue and his support and guidance throughout the editorial process and the handling of the submitted papers.