
Editorial

GUEST EDITOR

Prof. Constantin Zopounidis

During the last decades the globalization, the intensified competition and the rapid changes in the socio-economic and technological environment had a major impact on the global economic, financial and business environments. Within this new context banking and finance are becoming even more significant disciplines for the operation and sustainable development of every corporate entity (firm or organization).

At the same time, however, the aforementioned new context has increased the complexity of finance and banking operations and the decision-making problems encountered in these fields. The plethora of new financial and banking services and products that are currently available to firms and organizations to cover their financing and investment requirements is indicative of the recent transformations that prevail in the modern banking and finance industry.

Within this context decision-making procedures in the banking and finance sector need to be adjusted so that they comply with the complexity of the new environment. Empirical procedures are no longer adequate and they have gradually started to be replaced by sound quantitative methodologies originating from a plethora disciplines. Initially, these methodologies adopted an econometric, statistical and optimization perspective. Recently, however, new innovative approaches became of interest to financial and banking

researchers/ practitioners, such as artificial intelligence techniques (fuzzy sets theory, neural networks) and multiple criteria decision aid. These new methodologies provide new capabilities in modeling the existing complexity of decision-making problems in banking and finance. Nevertheless, irrespective of such discrimination between “traditional” and “modern” methodological approaches, it is now highly recognized by researchers and practitioners that quantitative disciplines such as statistics/econometrics, probability theory, simulation, stochastic processes, optimization, forecasting, fuzzy sets theory, neural networks, machine learning, multicriteria decision aid, etc., constitute a major integral part of the analysis of problems in banking and finance.

The above findings have motivated the preparation and publication of this special issue. The objective of this issue is to present the most recent advances in the development and application of advanced quantitative methodologies in the fields of banking and finance. After a rigorous reviewing process, six papers were finally accepted for publication in the special issue. These papers cover a wide range of banking and finance problems, including investment decisions, credit risk assessment, portfolio selection and management, corporate performance evaluation and mutual funds.

The special issue begins with the paper of Georgoutsos and Kouretas. The paper investigates the monetary policy independence as this is reflected in the inter-relationships between domestic and foreign market interest rates. To explore this issue, the authors use an econometric approach based on the cointegration theory, using data from the domestic USD, euromark and euroyen money markets. The paper of Luban presents a simulation methodology for risk analysis of capital investment decision-making problems. The proposed methodology is based on a Monte Carlo simulation to obtain a probability distribution of net present values, the calculation of the expected net present value, risk profiles analysis by stochastic dominance criterion, and as a final step

a sensitivity analysis using utility functions with different levels of risk aversion. The third paper by Bana e Costa, Barroso and Soares employs the multiattribute utility theory framework to model the credit scoring problem. In particular, the authors use the MACBETH approach to develop a model for scoring medium and long term loans to firms, considering a wide set of evaluation criteria involving the commercial interest of the credit application, the applicant's business profile and financial performance indices. The developed model assigns each credit application into categories including the rejection and the acceptance with different spreads. In the next paper, Kosmidou, Doumpos and Zopounidis propose the use of a multicriteria decision aid discrimination method (the MHDIS method) for the development of credit risk models. The method is used in both corporate credit granting (corporate credit risk assessment) and consumer credit granting (evaluation of credit card applications). In both cases the method is compared to well-known statistical and econometric techniques (discriminant analysis, logit analysis). The paper of Hurson and Ricci-Xella addresses the portfolio selection problem. The authors present a framework combining the Arbitrage Pricing Theory (APT) with the ELECTRE TRI multicriteria decision aid method and the MINORA system. In the first phase of the proposed methodology APT is employed to estimate portfolios' expected returns and to identify appropriate risk factors. The ELECTRE TRI method is then used to aggregate the identified risk factors into a global risk index. In the second stage of the process, the MINORA decision support system is employed to develop a model that ranks the portfolios from the best to the worst ones according to their risk/return characteristics. This methodology is applied on data from the French stock market. The paper of Dimitras also employs a multicriteria decision aid methodology. In particular the author uses the UTADIS classification method to evaluate the securities of Greek construction companies traded in the Athens Stock Exchange. The application of the

method leads to the classification of the securities into four groups according to their current state and their future perspectives, using both financial and stock market criteria.

Of course, one should acknowledge that the field of banking and finance is a very broad one, such that it would be impossible to address it in a fully comprehensive way within the limits of a special issue. Nevertheless, the range of banking and finance problems that are addressed in the papers included in this special issue, the variety of methodological tools that are employed, and the combination of the theoretical developments with their applications in practice, make this special issue a notable reference for academic researchers and practitioners who are involved with the use of quantitative methodologies in the fields of banking and finance.

Sincere thanks must be expressed to all the authors whose contributions have been essential in creating this special issue. I also owe a great debt to those who worked long and hard to review all the submitted papers and contributed to the achievement of a high standard of this special issue. Special thanks should also be given to Dr. Michael Doumpou for his valuable assistance in my contacts with the authors and his help in the material collection and management.

*Prof. Constantin Zopounidis
Special Issue, Guest Editor*