

MATHEMATICAL MODELLING IN BUSINESS, ENVIRONMENT, AND COMPUTER SCIENCE

POPESCU, Ion
ALBEANU, Grigore

Spiru Haret University, Bucharest, Romania
g.albeanu.mi@spiruharet.ro

Abstract

This note introduces eight papers presenting results obtained into the framework of the research direction "Results in theoretical mathematics, financial mathematics, actuarial mathematics, risk theory, applied mathematics in mechanics and social sciences" by the research group MATECON: "Applied mathematics in economy". The results were obtained based on intra and inter-university cooperation at national and international level.

Keywords: CAMAI, modern investment theory, time series, dynamic financial analysis, bootstrap, queueing models, uncertainty estimation, statistics teaching, indirect measurements

AMS classification: 62P20

Mathematical modelling is important for all fields of human activity, covering aspects from social, educational to industrial.

This special issue presents the results in mathematical modelling obtained by the research group MATECON, the Research Center in Mathematics and Informatics of *Spiru Haret* University.

The main topics addressed by the research team are: time series (theory and applications), simulation models (Monte Carlo, bootstrap), dynamic systems applied in econometrics, mathematical models in management (computing systems), and statistics and econometrics computer assisted teaching.

The group participates in consortia with research teams from Romania (University of Oradea, UNESCO IT Chair), Moldova (Academy of Science), France (INFRES) and Denmark (DTU).

A short presentation of every paper follows.

The first paper (Mişcoi et al.) discusses the investment theory from the decision point of view under second order acceleration model.

The second paper (Burtschy et al.) considers time series analysis in a soft computing framework (fuzzy modelling) with applicability in software reliability data analysis.

The third paper (Albeanu et al.) deals with financial analysis under bootstrap approach applied in different steps of DFA approach.

The fourth paper (Madsen et al.) apply queueing models (simple and generalized) in order for computing systems management and maintenance.

The fifth paper (Albeanu et al.) apply bootstrap principle for uncertainty estimation with application in quality assessment.

The sixth paper (Mişcoi et al.) discusses aspects on teaching statistics and econometrics in the framework of virtual learning.

The seventh paper (Albeanu et al.) considers bootstrap simulation models to study various aspects in forest research, including modern portfolio management.

The last paper considers the indirect measurement problem and in order to appreciate the accuracy of the estimated parameters (by direct or iterative methods) the authors use simulation models based on Monte Carlo simulation.

The presented material contains results disseminated during annual workshops on applied mathematics with the occasion of the CAMAI – the Annual Conference on Mathematics and Informatics (December 2008, and June 2009).