

Book Reviews

EXACT TOOLS FOR ANALYSIS OF NON-EXACT PROBLEMS.

Milan Mareš, ÚTIAV ČR

Anna Maria Gil-Lafuente: Fuzzy Logic and Financial Analysis

Heidelberg: Springer-Verlag, 2005. xiii + 450 pp. ISBN 3-540-23213-3

The referred monograph was published a few years ago, already, but its attempt to present a widely outlined survey of applicability of modern “fuzzy mathematics” in financial economic analysis deserves at least a note. Particular chapters of the volume are focused on various aspects of mathematical and logical approach to modern business and economy.

The mathematical tools discussed and explained in the book are those dealing with the phenomenon of uncertainty in the decision-making, optimization and management, namely with the uncertainty of a rather specific type, called the “vagueness” a formally represented by mathematical concepts of fuzzy set theory and related topics. It is worth mentioning that namely the global economic development of the last year has pointed out the necessity to manage the phenomena of uncertainty, subjectivity of expectations, vagueness of input data and other related components of real economy. The theory of fuzzy sets and theories derived from it, like fuzzy logic or fuzzy quantities theory offer adequate mathematical tools for exact analysis of such “non-exact” problems. Those branches of mathematics were developed to enable the construction of mathematical

models of processes in which the significant input information is formulated in vague data, coming from natural language or subjective estimation. The frequency of such models is high namely in economic theory and practice.

The text of the volume is divided into 23 chapters that can be grouped in several clusters. The first small group of chapters includes the specification of fundamental concepts and methods developed in further parts of the volume. They regard the fuzzy set theoretical and fuzzy logical processing of uncertainty in economic decision-making.

The second, much larger, cluster of chapters deals mostly with the analysis of financing and risk in the environment of uncertainty, namely with the accountancy, budgeting, solvency, but also with the financial analysis using various methods, risk analysis, and inference chains in the economic reasoning. Also several chapters dealing with the capital costs, their relations to financial structures and specification of value of the business can be attached to this cluster.

The third small group of two chapters is focused on the strategic behaviour in financial policy, namely that one aiming to the reduction of indebtedness in business and, on

the other hand, on the strategies for raising financial means. It is followed by next cluster whose three chapters deal with the differentiation and selection of financial products and with the model of neural structures representing the process of their selection.

The last group of chapters is oriented on some special problems of business structure. They are devoted to the process of assignments of financial means, in the concept and specification of economic-financial value of a business, setting up of a financial product, and, finally, on the effects by which the economic surroundings influence the financial activity. The volume is completed by a representative list of references.

The referred monograph is written with a respect to the needs of economic education. The text contains a small dose of formal mathematics but it includes lots of well chosen illustrative examples whose solutions are thoroughly analyzed, discussed and inter-

preted. The presentation of particular topics is lucid and the mathematics used in the explanation is very simple.

The mathematical methods in economy, including the financial analysis, were for a long time based on the dummy assumption that everything in economic models is deterministic and unambiguous. At least, that the models have to pretend to be so. On the other hand, the long experience, dramatically supported by the recent reality, shows that the financial markets are closely connected with essential uncertainty. The referred volume belongs to those monographs showing that the modern mathematics and information science has effective tools for management of that uncertainty and for its natural imbedding into economic theory. In other words, the referred work belongs to those who are extremely useful for everybody wishing to be informed about the mathematical tools becoming to be unavoidable in modern economic thinking of the near future.