Contents

1		roductionerences] [
2	Applications of Modern Mathematics in Economics						
	and	Finance	7				
	2.1	Fuzzy Set Theory and Applied Interval Analysis in					
		Economical and Financial Applications	7				
	2.2	Economic and Financial Applications of Rough Sets					
			l				
	2.3						
		Economics and Finance	4				
	2.4	Applications of Multiple Criteria Decision Making in					
			22				
	2.5	Summary and Discussion	29				
	Refe		3(
9	mi.	Make de Cou III. containte Madelina	4 1				
3			11				
	3.1		11				
			11				
		•	14				
		· · · · · · · · · · · · · · · · · · ·	18				
		v	52				
	3.2		3.				
	3.3	Dempster-Shafer Theory of Evidence	3(
		3.3.1 Basic Definitions	36				
		3.3.2 Combination of Evidence in the Dempster-Shafer					
		Theory	7(

X Contents

	3.3.3	Comparison Dead on the Drobabilistic Approach
		Comparison Based on the Probabilistic Approach
	0.0.4	and Dempster-Shafer Theory
	3.3.4	Intuitionistic Fuzzy Sets in the Framework of
0.4	C	Dempster-Shafer Theory
3.4		nary and Discussion
кег	erences	
MC	CDM v	vith Applications in Economics and Finance
4.1		M in the Fuzzy Setting
4.2		Steel Material Selection Problem
	4.2.1	Subsethood Measure for Linguistic Representation
		of Fuzzy Numbers
	4.2.2	Common Representation of Different Types of
		Local Criteria
	4.2.3	Probabilistic Method for Fuzzy Numbers
		Comparison
	4.2.4	Aggregation of Local Criteria and Aggregating
		Modes
4.3	Multi	ple Criteria Investment Project Evaluation in the
		Setting
	$4.3.1^{\circ}$	Local Criteria Building
	4.3.2	Ranking the Local Criteria
	4.3.3	Numerical Evaluation of the Comparing Investment
		Projects
	4.3.4	Hierarchical Structure of Local Criteria
4.4	Fuzzv	MCDM and Optimization in the Stock Screening
	4.4.1	Multiple Criteria Performance of Firms
	4.4.2	General Criterion of Firm's "Health" Based on
		Financial Rations
	4.4.3	Two-Criteria Performance of Firm Based on Stocks
		Prices History
	4.4.4	The Comparison of Stocks Ranking Methods
	4.4.5	Stock Ranking with the Use of Multiple Criteria
		Optimization
4.5	Multi	ple Criteria Fuzzy Evaluation and Optimization in
		eting
	4.5.1	The Problem Formulation
	4.5.2	
	4.5.3	The Set of Crisp IRR Estimations Based on Fuzzy
		Cash Flows
	4.5.4	A Method for Numerical Solution of the Project
		Optimization Problem
4.6	Sumn	nary and Discussion
		·····

Contents XI

5 In	terval and Fuzzy Arithmetic in Logistic	187
5.	1 Fuzzy Linear Programming Approach to the Distribution	
	Planning Problem	188
	5.1.1 The Methods for the Solution of Fuzzy Linear	
	Programming Problem	18
	5.1.2 The Direct Fuzzy Extension of the Simplex	
	Method	19
	5.1.3 Numerical Studies	19
5.3	2 Multiple Criteria Fuzzy Distribution Planning Problem	19
	5.2.1 The Problem Formulation	19
	5.2.2 The Solution of Multiple Criteria Fuzzy	
	Distribution Problem Using the Aggregation of	
	Aggregation Modes	19
5.3		20
Re	eferences	20
6 T	he Synthesis of Fuzzy Logic and DST in Stock	
T	rading Decision Support Systems	20
6.	1 Stock Trading Systems Based on Conventional Fuzzy	
	Logic	20
	6.1.1 Modern Approaches to Building Stock Trading	
	Systems	20
	6.1.2 Technical Analysis Indicators and Their Fuzzy	
	Representation	21
	6.1.3 Stock Trading System Based on the Mamdani's	
	Approach	21
	6.1.4 Expert System Based on Logic-Motivated Fuzzy	
	Logic Operators	21
	6.1.5 Comparing the Trading Systems Based on	
	Mamdani's Approach and Logic-Motivated Fuzzy	
	Logic Operators	21
6.3		
	Evidential Reasoning	22
	6.2.1 Experts Systems Based on Rule-Base Evidential	
	Reasoning	22
	6.2.2 A Modern Approach to the Rule-Base Evidential	
	Reasoning	22
	6.2.3 Stock Trading Expert System	22
6.3		23
	eferences	23
Re	enerences	23
7 A	pplication of Interval and Fuzzy Analysis in Economic	
	odeling	24
7.	-	24
۲٠.	7.1.1 The Problem Formulation	24
	7.1.2 Solution Linear Fuzzy Equations	
	1.1.4 DUIUHUH LIHERI TUZZY EQURUUHS	

XII Contents

7.2	Solving Interval Linear Systems and the Interval Leontiev's		
	Input-Output Problem	258	
	7.2.1 Solving Systems of Interval Linear Equations	258	
	7.2.2 Application to the Interval Leontief'S Input-Output		
	Model of Economics	264	
7.3	Solving Nonlinear Interval and Fuzzy Equations	267	
7.4	Fuzzy Internal Rate of Return in Budgeting	275	
	7.4.1 The Problem Formulation	276	
	7.4.2 Fuzzy Internal Rate of Return for Crisp Interval		
	Cash Flows. Basics	278	
	7.4.3 Numerical Solution of the Nonlinear Fuzzy Problem		
	of Internal Rate of Return Calculation	280	
	7.4.4 Possible Applications	285	
7.5	Summary and Discussion	287	
Refe	erences	288	
ex		293	