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Copula Methods in Finance Dynamic Copula Methods in Finance Copula Methods in Finance Dependence Modeling with Copulas Analysis of Survival Data with Dependent Censoring Elements of Copula Modeling with R Copula Modeling Copulas and Its Application in Hydrology and Water Resources Copula Theory and Its Applications Copulas Simulating Copulas Contributions to Static and Time-varying Copula-based Modeling of Multivariate Association Introduction to Bayesian Estimation and Copula Models of Dependence Financial Engineering with Copulas Explained Nonparametric methods in economics, and finance: dependence, causality and prediction Analyzing Dependent Data with Vine Copulas Credit Models and the Crisis Copula-Based Markov Models for Time Series Principles of Copula Theory Dependence Modeling: Vine Copula Handbook Survival Analysis with Correlated Endpoints Extremes in Nature Simulating Copulas: Stochastic Models, Sampling Algorithms, And Applications (Second Edition) Convolution Copula Econometrics Copulae and Multivariate Probability Distributions in Finance Statistical Methods and Applications in Forestry and Environmental Sciences Associative Functions Heavy Tails And Copulas: Topics In Dependence Modelling In Economics And Finance Handbook of Economic Forecasting Internet and Network Economics Survival Analysis with Correlated Endpoints Efficiency and Productivity Analysis Generalized Single-Valued Neutrosophic Power Aggregation Operators Based on Archimedean Copula and Co-Copula and Their Application to Multi-Attribute Decision-Making Copulas and their Applications in Water Resources Engineering Copulae in Mathematical and Quantitative Finance Collateralized Debt Obligations A D-Vine Copula-Based Quantile Regression Approach for the Prediction of Heating Energy Consumption. Using Historical Data for German Households Modeling Dependence in Econometrics Credit Correlation Natural Method in English

Copula Methods in Finance

2004-10-22

Copula methods in finance is the first book to address the mathematics of copula functions illustrated with finance applications it explains copulas by means of applications to major topics in derivative pricing and credit risk analysis examples include pricing of the main exotic derivatives barrier basket rainbow options as well as risk management issues particular focus is given to the pricing of asset backed securities and basket credit derivative products and the evaluation of counterparty risk in derivative transactions

Dynamic Copula Methods in Finance

2011-10-20

The latest tools and techniques for pricing and risk management this book introduces readers to the use of copula functions to represent the dynamics of financial assets and risk factors integrated temporal and cross section applications the first part of the book will briefly introduce the standard the theory of copula functions before examining the link between copulas and markov processes it will then introduce new techniques to design markov processes that are suited to represent the dynamics of market risk factors and their co movement providing techniques to both estimate and simulate such dynamics the second part of the book will show readers how to apply these methods to the evaluation of pricing of multivariate derivative contracts in the equity and credit markets it will then move on to explore the applications of joint temporal and cross section aggregation to the problem of risk integration

Copula Methods in Finance

2013

Annotation copula methods in finance is the first book to address the mathematics of copula functions illustrated with finance applications

IT EXPLAINS COPULAS BY MEANS OF APPLICATIONS TO MAJOR TOPICS IN DERIVATIVE PRICING AND CREDIT RISK ANALYSIS EXAMPLES INCLUDE PRICING OF THE MAIN EXOTIC DERIVATIVES BARRIER BASKET RAINBOW OPTIONS AS WELL AS RISK MANAGEMENT ISSUES PARTICULAR FOCUS IS GIVEN TO THE PRICING OF ASSET BACKED SECURITIES AND BASKET CREDIT DERIVATIVE PRODUCTS AND THE EVALUATION OF COUNTERPARTY RISK IN DERIVATIVE TRANSACTIONS

DEPENDENCE MODELING WITH COPULAS

2014-06-26

DEPENDENCE MODELING WITH COPULAS COVERS THE SUBSTANTIAL ADVANCES THAT HAVE TAKEN PLACE IN THE FIELD DURING THE LAST 15 YEARS INCLUDING VINE COPULA MODELING OF HIGH DIMENSIONAL DATA VINE COPULA MODELS ARE CONSTRUCTED FROM A SEQUENCE OF BIVARIATE COPULAS THE BOOK DEVELOPS GENERALIZATIONS OF VINE COPULA MODELS INCLUDING COMMON AND STRUCTURED FACTOR MODELS THAT EXTEND FROM THE GAUSSIAN ASSUMPTION TO COPULAS IT ALSO DISCUSSES OTHER MULTIVARIATE CONSTRUCTIONS AND PARAMETRIC COPULA FAMILIES THAT HAVE DIFFERENT TAIL PROPERTIES AND PRESENTS EXTENSIVE MATERIAL ON DEPENDENCE AND TAIL PROPERTIES TO ASSIST IN COPULA MODEL SELECTION THE AUTHOR SHOWS HOW NUMERICAL METHODS AND ALGORITHMS FOR INFERENCE AND SIMULATION ARE IMPORTANT IN HIGH DIMENSIONAL COPULA APPLICATIONS HE PRESENTS THE ALGORITHMS AS PSEUDOCODE ILLUSTRATING THEIR IMPLEMENTATION FOR HIGH DIMENSIONAL COPULA MODELS HE ALSO INCORPORATES RESULTS TO DETERMINE DEPENDENCE AND TAIL PROPERTIES OF MULTIVARIATE DISTRIBUTIONS FOR FUTURE CONSTRUCTIONS OF COPULA MODELS

ANALYSIS OF SURVIVAL DATA WITH DEPENDENT CENSORING

2018-04-05

THIS BOOK INTRODUCES READERS TO COPULA BASED STATISTICAL METHODS FOR ANALYZING SURVIVAL DATA INVOLVING DEPENDENT CENSORING PRIMARILY FOCUSING ON LIKELIHOOD BASED METHODS PERFORMED UNDER COPULA MODELS IT IS THE FIRST BOOK SOLELY DEVOTED TO THE PROBLEM OF DEPENDENT CENSORING THE BOOK DEMONSTRATES THE ADVANTAGES OF THE COPULA BASED METHODS IN THE CONTEXT OF MEDICAL RESEARCH ESPECIALLY WITH REGARD TO CANCER PATIENTS

SURVIVAL DATA NEEDLESS TO SAY THE STATISTICAL METHODS PRESENTED HERE CAN ALSO BE APPLIED TO MANY OTHER BRANCHES OF SCIENCE ESPECIALLY IN RELIABILITY WHERE SURVIVAL ANALYSIS PLAYS AN IMPORTANT ROLE THE BOOK CAN BE USED AS A TEXTBOOK FOR GRADUATE COURSEWORK OR A SHORT COURSE AIMED AT BIO STATISTICIANS TO DEEPEN READERS UNDERSTANDING OF COPULA BASED APPROACHES THE BOOK PROVIDES AN ACCESSIBLE INTRODUCTION TO BASIC SURVIVAL ANALYSIS AND EXPLAINS THE MATHEMATICAL FOUNDATIONS OF COPULA BASED SURVIVAL MODELS

Elements of Copula Modeling with R

2019-01-09

THIS BOOK INTRODUCES THE MAIN THEORETICAL FINDINGS RELATED TO COPULAS AND SHOWS HOW STATISTICAL MODELING OF MULTIVARIATE CONTINUOUS DISTRIBUTIONS USING COPULAS CAN BE CARRIED OUT IN THE R STATISTICAL ENVIRONMENT WITH THE PACKAGE COPULA AMONG OTHERS COPULAS ARE MULTIVARIATE DISTRIBUTION FUNCTIONS WITH STANDARD UNIFORM UNIVARIATE MARGINS THEY ARE INCREASINGLY APPLIED TO MODELING DEPENDENCE AMONG RANDOM VARIABLES IN FIELDS SUCH AS RISK MANAGEMENT ACTUARIAL SCIENCE INSURANCE FINANCE ENGINEERING HYDROLOGY CLIMATOLOGY AND METEOROLOGY TO NAME A FEW IN THE SPIRIT OF THE USE R SERIES EACH CHAPTER COMBINES KEY THEORETICAL DEFINITIONS OR RESULTS WITH ILLUSTRATIONS IN R AIMED AT STATISTICIANS ACTUARIES RISK MANAGERS ENGINEERS AND ENVIRONMENTAL SCIENTISTS WANTING TO LEARN ABOUT THE THEORY AND PRACTICE OF COPULA MODELING USING R WITHOUT AN OVERWHELMING AMOUNT OF MATHEMATICS THE BOOK CAN ALSO BE USED FOR TEACHING A COURSE ON COPULA MODELING

Copula Modeling

2007

COPULA MODELING EXPLORES THE COPULA APPROACH FOR ECONOMETRICS MODELING OF JOINT PARAMETRIC DISTRIBUTIONS COPULA MODELING DEMONSTRATES THAT PRACTICAL IMPLEMENTATION AND ESTIMATION IS RELATIVELY STRAIGHTFORWARD DESPITE THE COMPLEXITY OF ITS THEORETICAL FOUNDATIONS AN ATTRACTIVE FEATURE OF PARAMETRICALLY SPECIFIC COPULAS IS THAT ESTIMATION AND INFERENCE ARE BASED ON STANDARD MAXIMUM LIKELIHOOD PROCEDURES THUS COPULAS CAN BE ESTIMATED USING DESKTOP ECONOMETRIC SOFTWARE THIS OFFERS

A SUBSTANTIAL ADVANTAGE OF COPULAS OVER RECENTLY PROPOSED SIMULATION BASED APPROACHES TO JOINT MODELING COPULAS ARE USEFUL IN A VARIETY OF MODELING SITUATIONS INCLUDING FINANCIAL MARKETS ACTUARIAL SCIENCE AND MICROECONOMETRICS MODELING COPULA MODELING PROVIDES PRACTITIONERS AND SCHOLARS WITH A USEFUL GUIDE TO COPULA MODELING WITH A FOCUS ON ESTIMATION AND MISSPECIFICATION THE AUTHORS COVER IMPORTANT THEORETICAL FOUNDATIONS THROUGHOUT THE AUTHORS USE MONTE CARLO EXPERIMENTS AND SIMULATIONS TO DEMONSTRATE COPULA PROPERTIES

Copulas and Its Application in Hydrology and Water Resources

2018-06-28

THIS BOOK PRESENTS AN OVERVIEW OF COPULA THEORY AND ITS APPLICATION IN HYDROLOGY AND PROVIDES VALUABLE INSIGHTS USEFUL METHODS AND PRACTICAL APPLICATIONS FOR MULTIVARIATE HYDROLOGICAL ANALYSIS USING COPULAS IN ADDITION IT EXTENDS THE TRADITIONAL BIVARIATE MODEL TO TRIVARIATE OR MULTIVARIATE MODELS THE SPECIFIC APPLICATIONS COVERED INCLUDE THE STUDY OF FLOOD FREQUENCY ANALYSIS DROUGHT FREQUENCY ANALYSIS DEPENDENCE ANALYSIS FLOOD COINCIDENCE RISK ANALYSIS AND STATISTICAL SIMULATION USING COPULAS THE BOOK OFFERS A VALUABLE GUIDE FOR RESEARCHERS SCIENTISTS AND ENGINEERS WORKING IN HYDROLOGY AND WATER RESOURCES AND WILL ALSO BENEFIT GRADUATE OR DOCTORAL STUDENTS WITH A BASIC GRASP OF COPULA FUNCTIONS WHO WANT TO LEARN ABOUT THE LATEST RESEARCH DEVELOPMENTS IN THE FIELD

Copula Theory and Its Applications

2010-07-16

COPULAS ARE MATHEMATICAL OBJECTS THAT FULLY CAPTURE THE DEPENDENCE STRUCTURE AMONG RANDOM VARIABLES AND HENCE OFFER GREAT FLEXIBILITY IN BUILDING MULTIVARIATE STOCHASTIC MODELS SINCE THEIR INTRODUCTION IN THE EARLY 50 S COPULAS HAVE GAINED CONSIDERABLE POPULARITY IN SEVERAL FIELDS OF APPLIED MATHEMATICS SUCH AS FINANCE INSURANCE AND RELIABILITY THEORY TODAY THEY REPRESENT A WELL RECOGNIZED TOOL FOR MARKET AND CREDIT MODELS AGGREGATION OF RISKS PORTFOLIO SELECTION ETC THIS BOOK IS DIVIDED INTO TWO MAIN PARTS PART I SURVEYS CONTAINS 11 CHAPTERS THAT PROVIDE

AN UP TO DATE ACCOUNT OF ESSENTIAL ASPECTS OF COPULA MODELS PART II CONTRIBUTIONS COLLECTS THE EXTENDED VERSIONS OF 6 TALKS SELECTED FROM PAPERS PRESENTED AT THE WORKSHOP IN WARSAW

COPULAS

2007

THE USE OF COPULAS BECOMING INCREASINGLY IMPORTANT IN FINANCE THIS BOOK PROVIDES A VARIED PERSPECTIVE OF THEIR USAGE WITHIN THE FIELD OF FINANCIAL RISK MANAGEMENT AND DERIVATIVE PRICING IT INVOLVES A DETAILED ANALYSIS OF THE FIELD OF FINANCIAL RISK MANAGEMENT AND DERIVATIVE PRICING AND DELVES INTO THE THEORETICAL ASPECTS

SIMULATING COPULAS

2012-06-26

THIS BOOK PROVIDES THE READER WITH A BACKGROUND ON SIMULATING COPULAS AND MULTIVARIATE DISTRIBUTIONS IN GENERAL IT UNIFIES THE SCATTERED LITERATURE ON THE SIMULATION OF VARIOUS FAMILIES OF COPULAS ELLIPTICAL ARCHIMEDEAN MARSHALL OLKIN TYPE ETC AS WELL AS ON DIFFERENT CONSTRUCTION PRINCIPLES FACTOR MODELS PAIR COPULA CONSTRUCTION ETC THE BOOK IS SELF CONTAINED AND UNIFIED IN PRESENTATION AND CAN BE USED AS A TEXTBOOK FOR ADVANCED UNDERGRADUATE OR GRADUATE STUDENTS WITH A FIRM BACKGROUND IN STOCHASTICS ALONGSIDE THE THEORETICAL FOUNDATION READY TO IMPLEMENT ALGORITHMS AND MANY EXAMPLES MAKE THIS BOOK A VALUABLE TOOL FOR ANYONE WHO IS APPLYING THE METHODOLOGY ERRATA S ERRATA 128 KB SAMPLE CHAPTER S CHAPTER 1 INTRODUCTION 1 016 KB CHAPTER 4 ELLIPTICAL COPULAS 857 KB CONTENTS INTRODUCTIONARCHIMEDEAN COPULASMARSHALL OLKIN COPULASELLIPTICAL COPULASPAIR COPULA CONSTRUCTIONSSAMPLING UNIVARIATE RANDOM VARIABLESTHE MONTE CARLO METHOD READERSHIP ADVANCED UNDERGRADUATE AND GRADUATE STUDENTS IN PROBABILITY CALCULUS AND STOCHASTICS PRACTITIONERS WHO IMPLEMENT MODELS IN THE FINANCIAL INDUSTRY AND SCIENTISTS KEYWORDS COPULA SIMULATION MONTE CARLO RANDOM VECTOR DEPENDENCE MODELKEY FEATURES EXPLICIT FOCUS ON STOCHASTIC REPRESENTATIONS OF COPULAS IN CONTRAST TO AN ANALYTICAL PERSPECTIVEEASY TO IMPLEMENT SIMULATION SCHEMES GIVEN AS PSEUDO CODEEXPLICIT FOCUS ON HIGH DIMENSIONAL MODELSFOCUS ON APPLICABILITY OF

MODELS E G TO PORTFOLIO CREDIT RISK OR INSURANCEREVIEWS THE BOOK IS ESSENTIALLY SELF CONTAINED AS THE READER INTERESTED IN COPULAS FROM THE SIMULATION POINT OF VIEW WILL FIND ALL NECESSARY MATERIAL IN IT INCLUDING AN INTRODUCTION TO COPULAS IF HE HAS NEVER BEEN EXPOSED TO THEM BOTH THE THEORETICAL AND PRACTICAL FRAMEWORKS EMERGE QUITE CLEARLY FROM THE BOOK IN ANY CASE THE RICH BIBLIOGRAPHY CONTAINS ALL THE REFERENCES REQUIRED FOR FURTHER IN DEPTH ANALYSES OF SPECIFIC ISSUES I THINK THAT THE AUTHORS DID A VERY GOOD JOB FILLING A GAP IN THE STATISTICAL LITERATURE AND PROVIDING A CONTRIBUTION THAT IS GOING TO BE PARTICULARLY HELPFUL TO STATISTICIANS WITHOUT A SPECIFIC BACKGROUND IN COPULAS MATHEMATICAL REVIEWS

Contributions to Static and Time-varying Copula-based Modeling of Multivariate Association

2012

PUTTING A PARTICULAR EMPHASIS ON NONPARAMETRIC METHODS THAT RELY ON MODERN EMPIRICAL PROCESS TECHNIQUES THE AUTHOR CONTRIBUTES TO THE THEORY OF STATIC AND TIME VARYING STOCHASTIC MODELS FOR MULTIVARIATE ASSOCIATION BASED ON THE CONCEPT OF COPULAS THESE FUNCTIONS ENABLE A PROFOUND UNDERSTANDING OF MULTIVARIATE ASSOCIATION WHICH IS PIVOTAL FOR JUDGING WHETHER A LARGE SET OF RISKY ASSETS ENTAILS DIVERSIFICATION EFFECTS OR AGGRAVATES RISK FROM AN ENTREPRENEURIAL POINT OF VIEW SINCE SERIAL DEPENDENCE IS A STYLIZED FACT OF FINANCIAL TIME SERIES AN ASYMPTOTIC THEORY FOR ESTIMATING THE STRUCTURE OF ASSOCIATION IN THIS CONTEXT IS DEVELOPED UNDER WEAK ASSUMPTIONS A NEW MEASURE OF MULTIVARIATE ASSOCIATION BASED ON A NOTION OF DISTANCE TO STOCHASTIC INDEPENDENCE IS INTRODUCED ASYMPTOTIC RESULTS AS WELL AS HYPOTHESIS TESTS ARE ESTABLISHED WHICH ARE DIRECTLY APPLICABLE TO IMPORTANT TYPES OF MULTIVARIATE FINANCIAL TIME SERIES TO ENSURE THAT RISK MANAGEMENT PROPERLY CAPTURES THE CURRENT STRUCTURE OF ASSOCIATION IT IS CRUCIAL TO ASSESS THE CONSTANCY OF THE STRUCTURE THEREFORE NONPARAMETRIC TESTS FOR A CONSTANT COPULA WITH EITHER A SPECIFIED OR UNSPECIFIED CHANGE POINT CANDIDATE ARE DERIVED THE THESIS CONCLUDES WITH A STUDY OF CHARACTERIZATIONS OF ASSOCIATION BETWEEN NON CONTINUOUS RANDOM VARIABLES

Introduction to Bayesian Estimation and Copula Models of Dependence

2017-03-03

Presents an introduction to Bayesian statistics presents an emphasis on Bayesian methods prior and posterior Bayes estimation prediction MCMC Bayesian regression and Bayesian analysis of statistical modelsof dependence and features a focus on copulas for risk management introduction to Bayesian estimation and copula models of dependence emphasizes the applications of Bayesian analysis to copula modeling and equips readers with the tools needed to implement the procedures of Bayesian estimation in copula models of dependence this book is structured in two parts the first four chapters serve as a general introduction to Bayesian statistics with a clear emphasis on parametric estimation and the following four chapters stress statistical models of dependence with a focus of copulas a review of the main concepts is discussed along with the basics of Bayesian statistics including prior information and experimental data prior and posterior distributions with an emphasis on Bayesian parametric estimation the basic mathematical background of both Markov chains and Monte Carlo integration and simulation is also provided the authors discuss statistical models of dependence with a focus on copulas and present a brief survey of pre copula dependence models the main definitions and notations of copula models are summarized followed by discussions of real world cases that address particular risk management problems in addition this book includes practical examples of copulas in use including within the Basel Accord II documents that regulate the world banking system as well as examples of Bayesian methods within current FDA recommendations step by step procedures of multivariate data analysis and copula modeling allowing readers to gain insight for their own applied research and studies separate reference lists within each chapter and end of the chapter exercises within chapters 2 through 8 a companion website containing appendices data files and demo files in Microsoft Office Excel basic code in R and selected exercise solutions introduction to Bayesian estimation and copula models of dependence is a reference and resource for statisticians who need to learn formal Bayesian analysis as well as professionals within analytical and risk management departments of banks and insurance companies who are involved in quantitative analysis

AND FORECASTING THIS BOOK CAN ALSO BE USED AS A TEXTBOOK FOR UPPER UNDERGRADUATE AND GRADUATE LEVEL COURSES IN BAYESIAN STATISTICS AND ANALYSIS ARKADY SHEMYAKIN PHD IS PROFESSOR IN THE DEPARTMENT OF MATHEMATICS AND DIRECTOR OF THE STATISTICS PROGRAM AT THE UNIVERSITY OF ST THOMAS A MEMBER OF THE AMERICAN STATISTICAL ASSOCIATION AND THE INTERNATIONAL SOCIETY FOR BAYESIAN ANALYSIS DR SHEMYAKIN S RESEARCH INTERESTS INCLUDE INFORMATIONTHEORY BAYESIAN METHODS OF PARAMETRIC ESTIMATION AND COPULA MODELS IN ACTUARIAL MATHEMATICS FINANCE AND ENGINEERING ALEXANDER KNIAZEV PHD IS ASSOCIATE PROFESSOR AND HEAD OF THE DEPARTMENT OF MATHEMATICS AT ASTRAKHAN STATE UNIVERSITY IN RUSSIA DR KNIAZEV S RESEARCH INTERESTS INCLUDE REPRESENTATION THEORY OF LIE ALGEBRAS AND FINITE GROUPS MATHEMATICAL STATISTICS ECONOMETRICS AND FINANCIAL MATHEMATICS

Financial Engineering with Copulas Explained

2014-10-02

THIS IS A SUCCINCT GUIDE TO THE APPLICATION AND MODELLING OF DEPENDENCE MODELS OR COPULAS IN THE FINANCIAL MARKETS FIRST APPLIED TO CREDIT RISK MODELLING COPULAS ARE NOW WIDELY USED ACROSS A RANGE OF DERIVATIVES TRANSACTIONS ASSET PRICING TECHNIQUES AND RISK MODELS AND ARE A CORE PART OF THE FINANCIAL ENGINEER S TOOLKIT

Noneparametric methods in economics, and finance: dependence, causality and prediction

2004

THIS TEXTBOOK PROVIDES A STEP BY STEP INTRODUCTION TO THE CLASS OF VINE COPULAS THEIR STATISTICAL INFERENCE AND APPLICATIONS IT FOCUSES ON STATISTICAL ESTIMATION AND SELECTION METHODS FOR VINE COPULAS IN DATA APPLICATIONS THESE FLEXIBLE COPULA MODELS CAN SUCCESSFULLY ACCOMMODATE ANY FORM OF TAIL DEPENDENCE AND ARE VITAL TO MANY APPLICATIONS IN FINANCE INSURANCE HYDROLOGY MARKETING ENGINEERING CHEMISTRY AVIATION CLIMATOLOGY AND HEALTH THE BOOK EXPLAINS THE PAIR COPULA CONSTRUCTION PRINCIPLES UNDERLYING THESE STATISTICAL MODELS AND DISCUSSES HOW TO PERFORM MODEL SELECTION AND INFERENCE IT ALSO DERIVES

SIMULATION ALGORITHMS AND PRESENTS REAL WORLD EXAMPLES TO ILLUSTRATE THE METHODOLOGICAL CONCEPTS THE BOOK INCLUDES NUMEROUS EXERCISES THAT FACILITATE AND DEEPEN READERS UNDERSTANDING AND DEMONSTRATES HOW THE R PACKAGE VINECOPULA CAN BE USED TO EXPLORE AND BUILD STATISTICAL DEPENDENCE MODELS FROM SCRATCH IN CLOSING THE BOOK PROVIDES INSIGHTS INTO RECENT DEVELOPMENTS AND OPEN RESEARCH QUESTIONS IN VINE COPULA BASED MODELING THE BOOK IS INTENDED FOR STUDENTS AS WELL AS STATISTICIANS DATA ANALYSTS AND ANY OTHER QUANTITATIVELY ORIENTED RESEARCHERS WHO ARE NEW TO THE FIELD OF VINE COPULAS ACCORDINGLY IT PROVIDES THE NECESSARY BACKGROUND IN MULTIVARIATE STATISTICS AND COPULA THEORY FOR EXPLORATORY DATA TOOLS SO THAT READERS ONLY NEED A BASIC GRASP OF STATISTICS AND PROBABILITY

Analyzing Dependent Data with Vine Copulas

2019-05-14

THE RECENT FINANCIAL CRISIS HAS HIGHLIGHTED THE NEED FOR BETTER VALUATION MODELS AND RISK MANAGEMENT PROCEDURES BETTER UNDERSTANDING OF STRUCTURED PRODUCTS AND HAS CALLED INTO QUESTION THE ACTIONS OF MANY FINANCIAL INSTITUTIONS IT HAS BECOME COMMONPLACE TO BLAME THE INADEQUACY OF CREDIT RISK MODELS CLAIMING THAT THE CRISIS WAS DUE TO SOPHISTICATED AND OBSCURE PRODUCTS BEING TRADED BUT PRACTITIONERS HAVE FOR A LONG TIME BEEN AWARE OF THE DANGERS AND LIMITATIONS OF CREDIT MODELS IT WOULD SEEM THAT A LACK OF UNDERSTANDING OF THESE MODELS IS THE ROOT CAUSE OF THEIR FAILURES BUT UNTIL NOW LITTLE ANALYSIS HAD BEEN PUBLISHED ON THE SUBJECT AND WHEN PUBLISHED IT HAD GAINED VERY LIMITED ATTENTION CREDIT MODELS AND THE CRISIS IS A SUCCINCT BUT TECHNICAL ANALYSIS OF THE KEY ASPECTS OF THE CREDIT DERIVATIVES MODELING PROBLEMS TRACING THE DEVELOPMENT AND FLAWS OF NEW QUANTITATIVE METHODS FOR CREDIT DERIVATIVES AND CDOS UP TO AND THROUGH THE CREDIT CRISIS RESPONDING TO THE IMMEDIATE NEED FOR CLARITY IN THE MARKET AND ACADEMIC RESEARCH ENVIRONMENTS THIS BOOK FOLLOWS THE DEVELOPMENT OF CREDIT DERIVATIVES AND CDOS AT A TECHNICAL LEVEL ANALYZING THE IMPACT STRENGTHS AND WEAKNESSES OF METHODS RANGING FROM THE INTRODUCTION OF THE GAUSSIAN COPULA MODEL AND THE RELATED IMPLIED CORRELATIONS TO THE INTRODUCTION OF ARBITRAGE FREE DYNAMIC LOSS MODELS CAPABLE OF CALIBRATING ALL THE TRANCHES FOR ALL THE MATURITIES AT THE SAME TIME IT ALSO ILLUSTRATES THE IMPLIED COPULA A METHOD THAT CAN CONSISTENTLY ACCOUNT FOR CDOS WITH

DIFFERENT ATTACHMENT AND DETACHMENT POINTS BUT NOT FOR DIFFERENT MATURITIES AND EXPLAINS WHY THE GAUSSIAN COPULA MODEL IS STILL USED IN ITS BASE CORRELATION FORMULATION THE BOOK REPORTS BOTH ALARMING PRE CRISIS RESEARCH AND MARKET EXAMPLES AS WELL AS COMMENTARY THROUGH HISTORY USING DATA UP TO THE END OF 2009 MAKING IT AN IMPORTANT ADDITION TO MODERN DERIVATIVES LITERATURE WITH BANKS AND REGULATORS STRUGGLING TO FULLY ANALYZE AT A TECHNICAL LEVEL MANY OF THE FLAWS IN MODERN FINANCIAL MODELS IT WILL BE INDISPENSABLE FOR QUANTITATIVE PRACTITIONERS AND ACADEMICS WHO WANT TO DEVELOP STABLE AND FUNCTIONAL MODELS IN THE FUTURE

CREDIT MODELS AND THE CRISIS

2010-10-28

THIS BOOK PROVIDES STATISTICAL METHODOLOGIES FOR TIME SERIES DATA FOCUSING ON COPULA BASED MARKOV CHAIN MODELS FOR SERIALLY CORRELATED TIME SERIES IT ALSO INCLUDES DATA EXAMPLES FROM ECONOMICS ENGINEERING FINANCE SPORT AND OTHER DISCIPLINES TO ILLUSTRATE THE METHODS PRESENTED AN ACCESSIBLE TEXTBOOK FOR STUDENTS IN THE FIELDS OF ECONOMICS MANAGEMENT MATHEMATICS STATISTICS AND RELATED FIELDS WANTING TO GAIN INSIGHTS INTO THE STATISTICAL ANALYSIS OF TIME SERIES DATA USING COPULAS THE BOOK ALSO FEATURES STAND ALONE CHAPTERS TO APPEAL TO RESEARCHERS AS THE SUBTITLE SUGGESTS THE BOOK HIGHLIGHTS PARAMETRIC MODELS BASED ON NORMAL DISTRIBUTION T DISTRIBUTION NORMAL MIXTURE DISTRIBUTION POISSON DISTRIBUTION AND OTHERS PRESENTING LIKELIHOOD BASED METHODS AS THE MAIN STATISTICAL TOOLS FOR FITTING THE MODELS THE BOOK DETAILS THE DEVELOPMENT OF COMPUTING TECHNIQUES TO FIND THE MAXIMUM LIKELIHOOD ESTIMATOR IT ALSO ADDRESSES STATISTICAL PROCESS CONTROL AS WELL AS BAYESIAN AND REGRESSION METHODS LASTLY TO HELP READERS ANALYZE THEIR DATA IT PROVIDES COMPUTER CODES R CODES FOR MOST OF THE STATISTICAL METHODS

COPULA-BASED MARKOV MODELS FOR TIME SERIES

2020-07-01

THIS BOOK GIVES READERS THE SOLID AND FORMAL MATHEMATICAL BACKGROUND TO APPLY COPULAS TO A RANGE OF MATHEMATICAL AREAS SUCH AS PROBABILITY

REAL ANALYSIS MEASURE THEORY AND ALGEBRAIC STRUCTURES THE AUTHORS PROVE THE RESULTS AS SIMPLY AS POSSIBLE AND UNIFY VARIOUS METHODS SCATTERED THROUGHOUT THE LITERATURE IN COMMON FRAMEWORKS INCLUDING SHU

Principles of Copula Theory

2021-06-30

THIS BOOK IS A COLLABORATIVE EFFORT FROM THREE WORKSHOPS HELD OVER THE LAST THREE YEARS ALL INVOLVING PRINCIPAL CONTRIBUTORS TO THE VINE COPULA METHODOLOGY RESEARCH AND APPLICATIONS IN VINES HAVE BEEN GROWING RAPIDLY AND THERE IS NOW A GROWING NEED TO COLLATE BASIC RESULTS AND STANDARDIZE TERMINOLOGY AND METHODS SPECIFICALLY THIS HANDBOOK WILL 1 TRACE HISTORICAL DEVELOPMENTS STANDARDIZING NOTATION AND TERMINOLOGY 2 SUMMARIZE RESULTS ON BIVARIATE COPULAE 3 SUMMARIZE RESULTS FOR REGULAR VINES AND 4 GIVE AN OVERVIEW OF ITS APPLICATIONS IN ADDITION MANY OF THESE RESULTS ARE NEW AND NOT READILY AVAILABLE IN ANY EXISTING JOURNALS NEW RESEARCH DIRECTIONS ARE ALSO DISCUSSED

Dependence Modeling: Vine Copula Handbook

2010-12-23

THIS BOOK INTRODUCES READERS TO ADVANCED STATISTICAL METHODS FOR ANALYZING SURVIVAL DATA INVOLVING CORRELATED ENDPOINTS IN PARTICULAR IT DESCRIBES STATISTICAL METHODS FOR APPLYING COX REGRESSION TO TWO CORRELATED ENDPOINTS BY ACCOUNTING FOR DEPENDENCE BETWEEN THE ENDPOINTS WITH THE AID OF COPULAS THE PRACTICAL ADVANTAGES OF EMPLOYING COPULA BASED MODELS IN MEDICAL RESEARCH ARE EXPLAINED ON THE BASIS OF CASE STUDIES IN ADDITION THE BOOK FOCUSES ON CLUSTERED SURVIVAL DATA ESPECIALLY DATA ARISING FROM META ANALYSIS AND MULTICENTER ANALYSIS CONSEQUENTLY THE STATISTICAL APPROACHES PRESENTED HERE EMPLOY A FRAILTY TERM FOR HETEROGENEITY MODELING THIS BRINGS THE JOINT FRAILTY COPULA MODEL WHICH INCORPORATES A FRAILTY TERM AND A COPULA INTO A STATISTICAL MODEL THE BOOK ALSO DISCUSSES ADVANCED TECHNIQUES FOR DEALING WITH HIGH DIMENSIONAL GENE EXPRESSIONS AND DEVELOPING PERSONALIZED DYNAMIC PREDICTION TOOLS UNDER THE JOINT FRAILTY COPULA MODEL TO HELP READERS APPLY THE STATISTICAL METHODS TO REAL WORLD DATA THE BOOK PROVIDES CASE STUDIES USING THE AUTHORS ORIGINAL R SOFTWARE PACKAGE FREELY

AVAILABLE IN CRAN THE EMPHASIS IS ON CLINICAL SURVIVAL DATA INVOLVING TIME TO TUMOR PROGRESSION AND OVERALL SURVIVAL COLLECTED ON CANCER PATIENTS HENCE THE BOOK OFFERS AN ESSENTIAL REFERENCE GUIDE FOR MEDICAL STATISTICIANS AND PROVIDES RESEARCHERS WITH ADVANCED INNOVATIVE STATISTICAL TOOLS THE BOOK ALSO PROVIDES A CONCISE INTRODUCTION TO BASIC MULTIVARIATE SURVIVAL MODELS

Survival Analysis with Correlated Endpoints

2019-03-25

THIS BOOK IS ABOUT THE THEORETICAL AND PRACTICAL ASPECTS OF THE STATISTICS OF EXTREME EVENTS IN NATURE MOST IMPORTANTLY THIS IS THE FIRST TEXT IN WHICH COPULAS ARE INTRODUCED AND USED IN GEOPHYSICS SEVERAL TOPICS ARE FULLY ORIGINAL AND SHOW HOW STANDARD MODELS AND CALCULATIONS CAN BE IMPROVED BY EXPLOITING THE OPPORTUNITIES OFFERED BY COPULAS IN ADDITION NEW QUANTITIES USEFUL FOR DESIGN AND RISK ASSESSMENT ARE INTRODUCED

Extremes in Nature

2007-06-01

THE BOOK PROVIDES THE BACKGROUND ON SIMULATING COPULAS AND MULTIVARIATE DISTRIBUTIONS IN GENERAL IT UNIFIES THE SCATTERED LITERATURE ON THE SIMULATION OF VARIOUS FAMILIES OF COPULAS ELLIPTICAL ARCHIMEDEAN MARSHALL OLKIN TYPE ETC AS WELL AS ON DIFFERENT CONSTRUCTION PRINCIPLES FACTOR MODELS PAIR COPULA CONSTRUCTION ETC THE BOOK IS SELF CONTAINED AND UNIFIED IN PRESENTATION AND CAN BE USED AS A TEXTBOOK FOR GRADUATE AND ADVANCED UNDERGRADUATE STUDENTS WITH A FIRM BACKGROUND IN STOCHASTICS BESIDES THE THEORETICAL FOUNDATION READY TO IMPLEMENT ALGORITHMS AND MANY EXAMPLES MAKE THE BOOK A VALUABLE TOOL FOR ANYONE WHO IS APPLYING THE METHODOLOGY

Simulating Copulas: Stochastic Models,

Sampling Algorithms, And Applications (Second Edition)

2017-06-07

This book presents a novel approach to time series econometrics which studies the behavior of nonlinear stochastic processes this approach allows for an arbitrary dependence structure in the increments and provides a generalization with respect to the standard linear independent increments assumption of classical time series models the book offers a solution to the problem of a general semiparametric approach which is given by a concept called c convolution convolution of dependent variables and the corresponding theory of convolution based copulas intended for econometrics and statistics scholars with a special interest in time series analysis and copula functions or other nonparametric approaches the book is also useful for doctoral students with a basic knowledge of copula functions wanting to learn about the latest research developments in the field

Convolution Copula Econometrics

2016-12-01

Portfolio theory and much of asset pricing as well as many empirical applications depend on the use of multivariate probability distributions to describe asset returns traditionally this has meant the multivariate normal or gaussian distribution more recently theoretical and empirical work in financial economics has employed the multivariate student and other distributions which are members of the elliptically symmetric class there is also a growing body of work which is based on skew elliptical distributions these probability models all exhibit the property that the marginal distributions differ only by location and scale parameters or are restrictive in other respects very often such models are not supported by the empirical evidence that the marginal distributions of asset returns can differ markedly copula theory is a branch of statistics which provides powerful methods to overcome these shortcomings this book provides a synthesis of the latest research in the area of copulae as applied to finance and related subjects such as

INSURANCE MULTIVARIATE NON GAUSSIAN DEPENDENCE IS A FACT OF LIFE FOR MANY PROBLEMS IN FINANCIAL ECONOMETRICS THIS BOOK DESCRIBES THE STATE OF THE ART IN TOOLS REQUIRED TO DEAL WITH THESE OBSERVED FEATURES OF FINANCIAL DATA THIS BOOK WAS ORIGINALLY PUBLISHED AS A SPECIAL ISSUE OF THE EUROPEAN JOURNAL OF FINANCE

Copulae and Multivariate Probability Distributions in Finance

2013-08-21

THIS BOOK PRESENTS RECENT DEVELOPMENTS IN STATISTICAL METHODOLOGIES WITH PARTICULAR RELEVANCE TO APPLICATIONS IN FORESTRY AND ENVIRONMENTAL SCIENCES IT DISCUSSES IMPORTANT METHODOLOGIES LIKE RANKED SET SAMPLING ADAPTIVE CLUSTER SAMPLING SMALL AREA ESTIMATION CALIBRATION APPROACH BASED ESTIMATORS DESIGN OF EXPERIMENTS MULTIVARIATE TECHNIQUES INTERNET OF THINGS AND RIDGE REGRESSION METHODS IT ALSO COVERS THE HISTORY OF THE IMPLEMENTATION OF STATISTICAL TECHNIQUES IN INDIAN FORESTRY AND THE NATIONAL FOREST INVENTORY OF INDIA THE BOOK IS A VALUABLE RESOURCE FOR APPLIED STATISTICIANS STUDENTS RESEARCHERS AND PRACTITIONERS IN THE FORESTRY AND ENVIRONMENT SECTOR IT INCLUDES REAL WORLD EXAMPLES AND CASE STUDIES TO HELP READERS APPLY THE TECHNIQUES DISCUSSED IT ALSO MOTIVATES ACADEMICIANS AND RESEARCHERS TO USE NEW TECHNOLOGIES IN THE AREAS OF FORESTRY AND ENVIRONMENTAL SCIENCES WITH THE HELP OF SOFTWARE LIKE R MATLAB STATISTICA AND MATHEMATICA

Statistical Methods and Applications in Forestry and Environmental Sciences

2020-01-04

THE FUNCTIONAL EQUATION OF ASSOCIATIVITY IS THE TOPIC OF ABEL S FIRST CONTRIBUTION TO CRELLE S JOURNAL SEVENTY YEARS LATER IT WAS FEATURED AS THE SECOND PART OF HILBERT S FIFTH PROBLEM AND IT WAS SOLVED UNDER SUCCESSIVELY WEAKER HYPOTHESES BY BROUWER 1909 CARTAN 1930 AND ACZEL 1949 IN 1958 B SCHWEIZER AND A SKLAR SHOWED THAT THE TRIANGULAR NORMS INTRODUCED BY MENGER IN HIS DEFINITION OF A PROBABILISTIC METRIC SPACE SHOULD BE ASSOCIATIVE AND IN THEIR BOOK PROBABILISTIC METRIC SPACES THEY

PRESENTED THE BASIC PROPERTIES OF SUCH TRIANGULAR NORMS AND THE CLOSELY RELATED COPULAS SINCE THEN THE STUDY OF THESE TWO CLASSES OF FUNCTIONS HAS BEEN EVOLVING AT AN EVER INCREASING PACE AND THE RESULTS HAVE BEEN APPLIED IN FIELDS SUCH AS STATISTICS INFORMATION THEORY FUZZY SET THEORY MULTI VALUED AND QUANTUM LOGIC HYDROLOGY AND ECONOMICS IN PARTICULAR RISK ANALYSIS THIS BOOK PRESENTS THE FOUNDATIONS OF THE SUBJECT OF ASSOCIATIVE FUNCTIONS ON REAL INTERVALS IT BRINGS TOGETHER RESULTS THAT HAVE BEEN WIDELY SCATTERED IN THE LITERATURE AND ADDS MUCH NEW MATERIAL IN THE PROCESS VIRTUALLY ALL THE STANDARD TECHNIQUES FOR SOLVING FUNCTIONAL EQUATIONS IN ONE AND SEVERAL VARIABLES COME INTO PLAY THUS THE BOOK CAN SERVE AS AN ADVANCED UNDERGRADUATE OR GRADUATE TEXT ON FUNCTIONAL EQUATIONS

Associative Functions

2006

THIS BOOK OFFERS A UNIFIED APPROACH TO THE STUDY OF CRISES LARGE FLUCTUATIONS DEPENDENCE AND CONTAGION EFFECTS IN ECONOMICS AND FINANCE IT COVERS IMPORTANT TOPICS IN STATISTICAL MODELING AND ESTIMATION WHICH COMBINE THE NOTIONS OF COPULAS AND HEAVY TAILS TWO PARTICULARLY VALUABLE TOOLS OF TODAY S RESEARCH IN ECONOMICS FINANCE ECONOMETRICS AND OTHER FIELDS IN ORDER TO PROVIDE A NEW WAY OF THINKING ABOUT SUCH VITAL PROBLEMS AS DIVERSIFICATION OF RISK AND PROPAGATION OF CRISES THROUGH FINANCIAL MARKETS DUE TO CONTAGION PHENOMENA AMONG OTHERS THE AIM IS TO ARM TODAY S ECONOMISTS WITH A TOOLBOX SUITED FOR ANALYZING MULTIVARIATE DATA WITH MANY OUTLIERS AND WITH ARBITRARY DEPENDENCE PATTERNS THE METHODS AND TOPICS DISCUSSED AND USED IN THE BOOK INCLUDE IN PARTICULAR MAJORIZATION THEORY HEAVY TAILED DISTRIBUTIONS AND COPULA FUNCTIONS ALL APPLIED TO STUDY ROBUSTNESS OF ECONOMIC FINANCIAL AND STATISTICAL MODELS AND ESTIMATION METHODS TO HEAVY TAILS AND DEPENDENCE

Heavy Tails And Copulas: Topics In Dependence Modelling In Economics And Finance

2017-02-24

THE HIGHLY PRIZED ABILITY TO MAKE FINANCIAL PLANS WITH SOME CERTAINTY

ABOUT THE FUTURE COMES FROM THE CORE FIELDS OF ECONOMICS IN RECENT YEARS THE AVAILABILITY OF MORE DATA ANALYTICAL TOOLS OF GREATER PRECISION AND EX POST STUDIES OF BUSINESS DECISIONS HAVE INCREASED DEMAND FOR INFORMATION ABOUT ECONOMIC FORECASTING VOLUMES 2A AND 2B WHICH FOLLOWS NOBEL LAUREATE CLIVE GRANGER S VOLUME 1 2006 CONCENTRATE ON TWO MAJOR SUBJECTS VOLUME 2A COVERS INNOVATIONS IN METHODOLOGIES SPECIFICALLY MACROFORECASTING AND FORECASTING FINANCIAL VARIABLES VOLUME 2B INVESTIGATES COMMERCIAL APPLICATIONS WITH SECTIONS ON FORECASTERS OBJECTIVES AND METHODOLOGIES EXPERTS PROVIDE SURVEYS OF A LARGE RANGE OF LITERATURE SCATTERED ACROSS APPLIED AND THEORETICAL STATISTICS JOURNALS AS WELL AS ECONOMETRICS AND EMPIRICAL ECONOMICS JOURNALS THE HANDBOOK OF ECONOMIC FORECASTING VOLUMES 2A AND 2B PROVIDE A UNIQUE COMPILATION OF CHAPTERS GIVING A COHERENT OVERVIEW OF FORECASTING THEORY AND APPLICATIONS IN ONE PLACE AND WITH UP TO DATE ACCOUNTS OF ALL MAJOR CONCEPTUAL ISSUES FOCUSES ON INNOVATION IN ECONOMIC FORECASTING VIA INDUSTRY APPLICATIONS PRESENTS COHERENT SUMMARIES OF SUBJECTS IN ECONOMIC FORECASTING THAT STRETCH FROM METHODOLOGIES TO APPLICATIONS MAKES DETAILS ABOUT ECONOMIC FORECASTING ACCESSIBLE TO SCHOLARS IN FIELDS OUTSIDE ECONOMICS

Handbook of Economic Forecasting

2013-10-24

THIS BOOK CONSTITUTES THE REFEREED PROCEEDINGS OF THE FIRST INTERNATIONAL WORKSHOP ON INTERNET AND NETWORK ECONOMICS WINE 2005 HELD IN HONG KONG CHINA IN DECEMBER 2005 THE 108 REVISED FULL PAPERS PRESENTED TOGETHER WITH 2 INVITED TALKS WERE CAREFULLY REVIEWED AND SELECTED FROM 372 SUBMISSIONS THERE ARE 31 PAPERS IN THE MAIN PROGRAM AND 77 PAPERS PRESENTED IN 16 SPECIAL TRACKS COVERING THE AREAS OF INTERNET AND ALGORITHMIC ECONOMICS E COMMERCE PROTOCOLS SECURITY COLLABORATION REPUTATION AND SOCIAL NETWORKS ALGORITHMIC MECHANISM FINANCIAL COMPUTING AUCTION ALGORITHMS ONLINE ALGORITHMS COLLECTIVE RATIONALITY PRICING POLICIES WEB MINING STRATEGIES NETWORK ECONOMICS COALITION STRATEGIES INTERNET PROTOCOLS PRICE SEQUENCE AND EQUILIBRIUM

Internet and Network Economics

2005-12-05

This book introduces readers to advanced statistical methods for analyzing survival data involving correlated endpoints in particular it describes statistical methods for applying cox regression to two correlated endpoints by accounting for dependence between the endpoints with the aid of copulas the practical advantages of employing copula based models in medical research are explained on the basis of case studies in addition the book focuses on clustered survival data especially data arising from meta analysis and multicenter analysis consequently the statistical approaches presented here employ a frailty term for heterogeneity modeling this brings the joint frailty copula model which incorporates a frailty term and a copula into a statistical model the book also discusses advanced techniques for dealing with high dimensional gene expressions and developing personalized dynamic prediction tools under the joint frailty copula model to help readers apply the statistical methods to real world data the book provides case studies using the authors original r software package freely available in cran the emphasis is on clinical survival data involving time to tumor progression and overall survival collected on cancer patients hence the book offers an essential reference guide for medical statisticians and provides researchers with advanced innovative statistical tools the book also provides a concise introduction to basic multivariate survival models

Survival Analysis with Correlated Endpoints

2019

This book is an easy to understand guide to modeling productivity and efficiency using modern statistical tools it introduces readers to the fundamentals of stochastic frontier analysis sfa and gradually takes them to the forefront of academic research in this area examining the latest concepts and methods related to the use of copulas in sfa following a comprehensive review of classic methodology professor artem prokhorov covers topics in panel data modeling in endogeneity in sfa in joint modeling of technical and allocative inefficiency and in

OPTIMAL AND ROBUST PREDICTION OF INEFFICIENCY SCORES THIS IS DONE USING COPULAS TO CAPTURE VARIOUS KINDS OF STATISTICAL DEPENDENCE THAT HAVE BEEN PREVIOUSLY IGNORED WHEN MODELING PRODUCTION THE CLASSIC AND ADVANCED TOPICS ARE ILLUSTRATED USING PRACTICAL EXAMPLES AND CODES WRITTEN IN MODERN PROGRAMMING LANGUAGES AS AN IMPORTANT EXAMPLE THE BOOK SPELLS OUT THE CASE WHERE BOTH THE VALUES OF OUTPUT AND THE RATIO OF INPUTS USED IN PRODUCTION ARE OPTIMIZED SIMULTANEOUSLY SUCH SIMULTANEITY IF IGNORED LEADS TO BIASED ESTIMATES OF PRODUCTIVITY AND RETURNS TO SCALE AND MAY UNDERSTATE INEFFICIENCY THE BOOK OFFERS A USEFUL REFERENCE FOR THOSE INTERESTED IN THE NEWEST ROBUST METHODS OF BUSINESS ANALYTICS IN THE AREA OF PRODUCTIVITY AND EFFICIENCY WITH IMPLICATIONS FOR STRATEGY BUDGETING RESOURCING AND BENCHMARKING OF FIRMS INDUSTRIES AND PRODUCTION UNITS MORE GENERALLY

Efficiency and Productivity Analysis

2024-02-28

SINGLE VALUED NEUTROSOPHIC SET SVN CAN VALID DEPICT THE INCOMPLETENESS NONDETERMINACY AND INCONSISTENCY OF EVALUATION OPINION AND THE POWER AVERAGE PA OPERATOR CAN TAKE INTO ACCOUNT THE CORRELATION OF MULTIPLE DISCUSSED DATA MEANWHILE ARCHIMEDEAN COPULA AND CO COPULA ACC CAN SIGNI CANT GENERATE OPERATIONAL LAWS BASED UPON DIVERSE COPULAS

Generalized Single-Valued Neutrosophic Power Aggregation Operators Based on Archimedean Copula and Co-Copula and Their Application to Multi-Attribute Decision-Making

2019-01-10

COMPLEX ENVIRONMENTAL AND HYDROLOGICAL PROCESSES ARE CHARACTERIZED BY MORE THAN ONE CORRELATED RANDOM VARIABLE THESE EVENTS ARE MULTIVARIATE AND THEIR TREATMENT REQUIRES MULTIVARIATE FREQUENCY ANALYSIS TRADITIONAL ANALYSIS METHODS ARE HOWEVER TOO RESTRICTIVE AND DO NOT APPLY IN MANY CASES RECENT YEARS HAVE THEREFORE WITNESSED NUMEROUS APPLICATIONS OF COPULAS TO MULTIVARIATE HYDROLOGIC FREQUENCY ANALYSES

THIS BOOK DESCRIBES THE BASIC CONCEPTS OF COPULAS AND OUTLINES CURRENT TRENDS AND DEVELOPMENTS IN COPULA METHODOLOGY AND APPLICATIONS IT INCLUDES AN ACCESSIBLE DISCUSSION OF THE METHODS ALONGSIDE SIMPLE STEP BY STEP SAMPLE CALCULATIONS DETAILED CASE STUDIES WITH REAL WORLD DATA ARE INCLUDED AND ARE ORGANIZED BASED ON APPLICATIONS SUCH AS FLOOD FREQUENCY ANALYSIS AND WATER QUALITY ANALYSIS ILLUSTRATING HOW TO APPLY THE COPULA METHOD TO MULTIVARIATE FREQUENCY ANALYSIS ENGINEERING DESIGN AND RISK AND UNCERTAINTY ANALYSIS THIS BOOK IS IDEAL FOR RESEARCHERS PROFESSIONALS AND GRADUATE STUDENTS IN HYDROLOGY AND WATER RESOURCES ENGINEERING

Copulas and their Applications in Water Resources Engineering

2013-06-18

COPULAS ARE MATHEMATICAL OBJECTS THAT FULLY CAPTURE THE DEPENDENCE STRUCTURE AMONG RANDOM VARIABLES AND HENCE OFFER GREAT FLEXIBILITY IN BUILDING MULTIVARIATE STOCHASTIC MODELS SINCE THEIR INTRODUCTION IN THE EARLY 1950S COPULAS HAVE GAINED CONSIDERABLE POPULARITY IN SEVERAL FIELDS OF APPLIED MATHEMATICS ESPECIALLY FINANCE AND INSURANCE TODAY COPULAS REPRESENT A WELL RECOGNIZED TOOL FOR MARKET AND CREDIT MODELS AGGREGATION OF RISKS AND PORTFOLIO SELECTION HISTORICALLY THE GAUSSIAN COPULA MODEL HAS BEEN ONE OF THE MOST COMMON MODELS IN CREDIT RISK HOWEVER THE RECENT FINANCIAL CRISIS HAS UNDERLINED ITS LIMITATIONS AND DRAWBACKS IN FACT DESPITE THEIR SIMPLICITY GAUSSIAN COPULA MODELS SEVERELY UNDERESTIMATE THE RISK OF THE OCCURRENCE OF JOINT EXTREME EVENTS RECENT THEORETICAL INVESTIGATIONS HAVE PUT NEW TOOLS FOR DETECTING AND ESTIMATING DEPENDENCE AND RISK LIKE TAIL DEPENDENCE TIME VARYING MODELS ETC IN THE SPOTLIGHT ALL SUCH INVESTIGATIONS NEED TO BE FURTHER DEVELOPED AND PROMOTED A GOAL THIS BOOK PURSUES THE BOOK INCLUDES SURVEYS THAT PROVIDE AN UP TO DATE ACCOUNT OF ESSENTIAL ASPECTS OF COPULA MODELS IN QUANTITATIVE FINANCE AS WELL AS THE EXTENDED VERSIONS OF TALKS SELECTED FROM PAPERS PRESENTED AT THE WORKSHOP IN CRACOW

Copulae in Mathematical and Quantitative

Finance

2014-01-22

THE AUTHOR FOCUSES ON A METHOD TO PRICE COLLATERALIZED DEBT OBLIGATIONS CDO TRANCHES THE ORIGINAL METHOD IS DEVELOPED BY CASTAGNA MERCURIO AND MOSCONI IN 2012 THE THESIS PROVIDES AN EXTENSION OF THE ORIGINAL WORK BY GENERALIZING THE GAUSSIAN DEPENDENCE IN TERMS OF COPULA FUNCTIONS IN PARTICULAR THE MODEL IS REWRITTEN FOR THE SPECIFIC CASE OF THE CLAYTON COPULA THE METHOD IS APPLIED TO PRICE THE TRANCHES OF A CDX BY COMPARING THE TRANCHES PRICES IT IS POSSIBLE TO NOTICE THAT THE CLAYTON APPROACH LEADS TO SMALLER EQUITY AND MEZZANINE TRANCHES THE SENIOR AND SUPER SENIOR TRANCHES LEVELS ARE HIGHER WHEN THE DEPENDENCE IS MODELED BY A CLAYTON COPULA

Collateralized Debt Obligations

2019-09-23

MASTER S THESIS FROM THE YEAR 2018 IN THE SUBJECT ECONOMICS STATISTICS AND METHODS GRADE 1 0 UNIVERSITY OF AUGSBURG LANGUAGE ENGLISH ABSTRACT THE AIM OF THIS THESIS IS TO ADD TO THE AS OF YET MOSTLY MISSING LITERATURE ON HOW A D VINE COPULA BASED QUANTILE REGRESSION MODEL CAN BE USED TO PREDICTE THE ACCURATE LEVEL OF ENERGY CONSUMPTION ENERGETIC RETROFITTING OF RESIDENTIAL BUILDINGS IS POISED TO PLAY AN IMPORTANT ROLE IN THE ACHIEVEMENT OF AMBITIOUS GLOBAL CLIMATE TARGETS A PREREQUISITE FOR PURPOSEFUL POLICY MAKING AND PRIVATE INVESTMENTS IS THE ACCURATE PREDICTION OF ENERGY CONSUMPTION BUILDING ENERGY MODELS ARE MOSTLY BASED ON ENGINEERING METHODS QUANTIFYING THEORETICAL ENERGY CONSUMPTION HOWEVER A PERFORMANCE GAP BETWEEN PREDICTED AND ACTUAL CONSUMPTION HAS BEEN IDENTIFIED IN LITERATURE DATA DRIVEN METHODS USING HISTORICAL DATA CAN POTENTIALLY OVERCOME THIS ISSUE THE D VINE COPULA BASED QUANTILE REGRESSION MODEL USED IN THIS STUDY ACHIEVED VERY GOOD FITTING RESULTS BASED ON A REPRESENTATIVE DATA SET COMPRISING 25 000 GERMAN HOUSEHOLDS THE FINDINGS SUGGEST THAT QUANTILE REGRESSION INCREASES TRANSPARENCY BY ANALYZING THE ENTIRE DISTRIBUTION OF HEATING ENERGY CONSUMPTION FOR INDIVIDUAL BUILDING CHARACTERISTICS MORE SPECIFICALLY THE ANALYSES REVEAL THE FOLLOWING EXEMPLARY INSIGHTS FIRST FOR DIFFERENT LEVELS OF ENERGY EFFICIENCY THE REBOUND EFFECT EXHIBITS CYCLICAL BEHAVIOR AND SIGNIFICANTLY

varies across quantiles second very energy conscious and energy wasteful households are prone to more extreme rebound effects third with regards to the performance gap heating energy demand of inefficient buildings is systematically underestimated while it is overestimated for efficient buildings therefore the remainder of this thesis is organized as follows section 2 presents a concise categorization of building energy models section 3 presents existing data driven methods used for the pre diction of heating energy consumption in the residential sector next section 4 elaborates on vine copula based quantile regression this is followed by a description of the data employed in section 5 section 6 presents the empirical results and section 7 provides the practical im plications and contribution of the quantile regression approach introduced finally the conclu sions and limitations of this thesis are discussed in section 8

A D-Vine Copula-Based Quantile Regression Approach for the Prediction of Heating Energy Consumption. Using Historical Data for German Households

2013-11-18

in economics many quantities are related to each other such economic relations are often much more complex than relations in science and engineering where some quantities are independence and the relation between others can be well approximated by linear functions as a result of this complexity when we apply traditional statistical techniques developed for science and engineering to process economic data the inadequate treatment of dependence leads to misleading models and erroneous predictions some economists even blamed such inadequate treatment of dependence for the 2008 financial crisis to make economic models more adequate we need more accurate techniques for describing dependence such techniques are currently being developed this book contains description of state of the art techniques for modeling dependence and economic applications of these techniques most of these research developments are centered around the notion of a copula a general way of describing dependence in probability theory and statistics to be even more adequate many papers go beyond traditional copula

TECHNIQUES AND TAKE INTO ACCOUNT E G THE DYNAMICAL CHANGING CHARACTER
OF THE DEPENDENCE IN ECONOMICS

Modeling Dependence in Econometrics

1881

Credit Correlation

Natural Method in English

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