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Financial Modeling - Simon Benninga 2000
Too often, finance courses stop short of making a connection between textbook finance and the problems of real-world business. "Financial Modeling" bridges this gap between theory and practice by providing a nuts-and-bolts guide to solving common financial problems with spreadsheets. The CD-ROM contains Excel* worksheets and solutions to end-of-chapter exercises. 634 illustrations.
Simulation of Dynamic Systems with MATLAB® and Simulink® - Harold Klee 2018-02-02
Continuous-system simulation is an increasingly important tool for optimizing the performance of real-world systems. The book presents an integrated treatment of continuous simulation with all the background and essential prerequisites in one setting. It features updated chapters and two new sections on Black Swan and the Stochastic Information Packet (SIP) and Stochastic Library Units with Relationships Preserved (SLURP) Standard. The new edition includes basic concepts, mathematical tools, and the common principles of various simulation models for different phenomena, as well as an abundance of case studies, real-world examples, homework problems, and equations to develop a practical understanding of concepts.
Advanced Modelling in Finance Using Excel and VBA - Mary Jackson 2001-06-08
This new and unique book demonstrates that Excel and VBA can play an important role in the explanation and implementation of numerical methods across finance. Advanced Modelling in Finance provides a comprehensive look at equities, options on equities and options on bonds from the early 1950s to the late 1990s. The book adopts a step-by-step approach to understanding the more sophisticated aspects of Excel macros and VBA programming, showing how these programming techniques can be used to model and manipulate financial data, as applied to equities, bonds and options. The book is essential for financial practitioners who need to develop their financial modelling skill sets as there is an increase in the need to analyse and develop ever more complex 'what if' scenarios. Specifically applies Excel and VBA to the financial markets Packaged with a CD containing the software from the examples throughout the book Note: CD-ROM/DVD and other

supplementary materials are not included as part of eBook file.

Simulation and Optimization in Finance - Dessislava A. Pachamanova 2010-09-23

An introduction to the theory and practice of financial simulation and optimization In recent years, there has been a notable increase in the use of simulation and optimization methods in the financial industry. Applications include portfolio allocation, risk management, pricing, and capital budgeting under uncertainty. This accessible guide provides an introduction to the simulation and optimization techniques most widely used in finance, while at the same time offering background on the financial concepts in these applications. In addition, it clarifies difficult concepts in traditional models of uncertainty in finance, and teaches you how to build models with software. It does this by reviewing current simulation and optimization methodology-along with available software-and proceeds with portfolio risk management, modeling of random processes, pricing of financial derivatives, and real options applications. Contains a unique combination of finance theory and rigorous mathematical modeling emphasizing a hands-on approach through implementation with software Highlights not only classical applications, but also more recent developments, such as pricing of mortgage-backed securities Includes models and code in both spreadsheet-based software (@RISK, Solver, Evolver, VBA) and mathematical modeling software (MATLAB) Filled with in-depth insights and practical advice, Simulation and Optimization Modeling in Finance offers essential guidance on some of the most important topics in financial management.

Handbook of Computational Finance - Jin-Chuan Duan 2011-10-25

Any financial asset that is openly traded has a market price. Except for extreme market conditions, market price may be more or less than a “fair” value. Fair value is likely to be some complicated function of the current intrinsic value of tangible or intangible assets underlying the claim and our assessment of the characteristics of the underlying assets with respect to the expected rate of growth, future dividends, volatility, and other relevant market factors. Some of these factors that affect the price can be measured at the time of a transaction with reasonably high accuracy. Most factors, however, relate to expectations about the future and to subjective issues, such as current management, corporate policies and market environment, that could affect the future financial performance of the underlying assets. Models are thus needed to describe the stochastic factors and environment, and their implementations inevitably require computational finance tools.

Hedge Fund Modelling and Analysis Using Excel and VBA - Paul Darbyshire 2012-02-23

Co-authored by two respected authorities on hedge funds and asset management, this implementation-oriented guide shows you how to employ a range of the most commonly used analysis tools and techniques both in industry and academia, for understanding, identifying and managing risk as well as for quantifying return factors across several key investment strategies. The book is also suitable for use as a core textbook for specialised graduate level courses in hedge funds and alternative investments. The book provides hands-on coverage of the visual and theoretical methods for measuring and modelling hedge fund performance with an emphasis on risk-adjusted performance metrics and techniques. A range of sophisticated risk analysis models and risk management strategies are also described in detail. Throughout, coverage is supplemented with helpful skill building exercises and worked examples in Excel and VBA. The book's dedicated website, www.darbyshirehampton.com provides Excel spreadsheets and VBA source code which can be freely downloaded and also features links to other relevant and useful resources. A comprehensive course in hedge fund modelling and analysis, this book arms you with the knowledge and tools required to effectively manage your risks and to optimise the return profile of your investment style.

Quantitative Methods - Paolo Brandimarte 2012-01-03

An accessible introduction to the essential quantitative methods for making valuable business decisions Quantitative methods-research techniques used to analyze quantitative data-enable professionals to organize and understand numbers and, in turn, to make good decisions. Quantitative Methods: An Introduction for Business Management presents the application of quantitative mathematical modeling to decision making in a business management context and emphasizes not only the role of data in drawing conclusions, but also the pitfalls of undiscerning reliance of software packages that implement standard statistical procedures. With hands-on applications and explanations that are accessible to readers at various levels, the book successfully outlines the necessary tools to make smart and successful business decisions. Progressing from beginner to more advanced material at an easy-to-follow pace, the author utilizes motivating examples throughout to aid readers interested in decision making and also provides critical remarks, intuitive traps, and counterexamples when appropriate. The book begins with a discussion of motivations and foundations related to the topic, with introductory presentations of concepts from calculus to linear algebra. Next, the core ideas of quantitative methods are presented in chapters that explore introductory topics in probability, descriptive and inferential statistics, linear regression, and a discussion of time series that includes both classical topics and more challenging models. The author also discusses linear programming models and decision making under risk as well as less standard topics in the field such as game theory and Bayesian statistics. Finally, the book concludes with a focus on selected tools from multivariate statistics, including advanced regression models and data reduction methods such as principal component analysis, factor analysis, and cluster analysis. The book promotes the importance of an analytical approach, particularly when dealing with a complex system where multiple individuals are involved and have conflicting incentives. A related website features Microsoft Excel® workbooks and MATLAB® scripts to illustrate concepts as well as additional exercises with solutions. Quantitative Methods is an excellent book for courses on the topic at the graduate level. The book also serves as an authoritative reference and self-study guide for financial and business professionals, as well as readers looking to reinforce their analytical skills.

Financial Modelling - Joerg Kienitz 2013-02-18

Financial modelling Theory, Implementation and Practice with MATLAB Source Jörg Kienitz and Daniel Wetterau Financial Modelling - Theory, Implementation and Practice with MATLAB Source is a unique combination of quantitative techniques, the application to financial problems and programming using Matlab. The book enables the reader to model, design and implement a wide range of financial models for derivatives pricing and asset allocation, providing practitioners with complete financial modelling workflow, from model choice, deriving prices and Greeks using (semi-) analytic and simulation techniques, and calibration even for exotic options. The book is split into three parts. The first part considers financial markets in general and looks at the complex models needed to handle observed structures, reviewing models based on diffusions including stochastic-local volatility models and (pure) jump processes. It shows the possible risk-neutral densities, implied volatility surfaces, option pricing and typical paths for a variety of models including SABR, Heston, Bates, Bates-Hull-White, Displaced-Heston, or stochastic volatility versions of Variance Gamma, respectively Normal Inverse Gaussian models and finally, multi-dimensional models. The stochastic-local-volatility Libor market model with time-dependent parameters is considered and as an application how to price and risk-manage CMS spread products is demonstrated. The second part of the book deals with numerical methods which enables the reader to use the models of the first part for pricing and risk management, covering methods based on direct integration and Fourier transforms, and detailing the implementation of the COS, CONV, Carr-Madan method or Fourier-Space-Time Stepping. This is applied to pricing of European, Bermudan and exotic options as well as the calculation of the Greeks. The Monte Carlo simulation technique is outlined and bridge sampling is discussed in a Gaussian setting and for Lévy processes. Computation of Greeks is covered using likelihood ratio methods and adjoint techniques. A chapter on state-of-the-art optimization algorithms rounds up the toolkit for applying advanced mathematical models to financial problems and the last chapter in this section of the book also serves as an introduction to model risk. The third part is devoted to the usage of Matlab, introducing the software package by describing the basic functions applied for financial engineering. The programming is approached from an object-oriented perspective with examples to propose a framework for calibration, hedging and the adjoint method for calculating Greeks in a Libor market model. Source code used for producing the results and analysing the models is provided on the author's dedicated website, http://www.mathworks.de/matlabcentral/fileexchange/authors/246981.

Dynamic Macroeconomic Models in Emerging Market Economies - Daniel Lukui Jia 2020-08-26

This book summarizes the evolution of modern macroeconomics (New Consensus Macroeconomics, NCM) and proposes a new approach to theoretical and empirical analysis, which is based on a recently developed dynamic stochastic general equilibrium (DSGE) model. Dynamic macroeconomic analysis in emerging market economies is challenging, and of growing importance in the global economy, where emerging markets are becoming more and more influential. Clearly, a deeper understanding of the inner workings of emerging economies, particularly with respect to their socioeconomic structure and the urbanization process, is needed. The book's extends the NCM/DSGE model to better account for significant economic and social features in emerging market economies. In particular, household heterogeneities and social stratification are explicitly incorporated into the framework proposed here, substantially enhancing the comprehensiveness of the model economy, and allowing it to better account for underlying social structure in emerging economies. Furthermore, financial and housing markets have not been considered sufficiently in either the advanced or emerging economy literature, an oversight this book remedies. As such, it makes an original and valuable contribution to the field, and a direction for future research.

Business Economics and Finance with MATLAB, GIS, and Simulation Models - Patrick L. Anderson 2004-07-27

This book takes recent theoretical advances in Finance and Economics and shows how they can be implemented in the real world. It presents tactics for using mathematical and simulation models to solve complex tasks of forecasting income, valuing businesses, predicting retail sales, and evaluating markets and tax and regulatory problems. Busine

Rating Based Modeling of Credit Risk - Stefan Trueck 2009-01-15

In the last decade rating-based models have become very popular in credit risk management. These systems use the rating of a company as the decisive variable to evaluate the default risk of a bond or loan. The popularity is due to the straightforwardness of the approach, and to the upcoming new capital accord (Basel II), which allows banks to base their capital requirements on internal as well as external rating systems. Because of this, sophisticated credit risk models are being developed or demanded by banks to assess the risk of their credit portfolio better by recognizing the different underlying sources of risk. As a consequence, not only default probabilities for certain rating categories but also the probabilities of moving from one rating state to another are important issues in such models for risk management and pricing. It is widely accepted that rating migrations and default probabilities show significant variations through time due to macroeconomics conditions or the business cycle. These changes in migration behavior may have a substantial impact on the value-at-risk (VAR) of a credit portfolio or the prices of credit derivatives such as collateralized debt obligations (D+CDOs). In Rating Based Modeling of Credit Risk the authors develop a much more sophisticated analysis of migration behavior. Their contribution of more sophisticated techniques to measure and forecast changes in migration behavior as well as determining adequate estimators for transition matrices is a major contribution to rating based credit modeling. Internal ratings-based systems are widely used in banks to calculate their value-at-risk (VAR) in order to determine their capital requirements for loan and bond portfolios under Basel II One aspect of these ratings systems is credit migrations, addressed in a systematic and comprehensive way for the first time in this book The book is based on in-depth work by Trueck and Rachev

Advanced Hydroinformatic Techniques for the Simulation and Analysis of Water Supply and Distribution Systems - Manuel Herrera 2018-07-19

This book is a printed edition of the Special Issue "Advanced

Hydroinformatic Techniques for the Simulation and Analysis of Water Supply and Distribution Systems" that was published in Water

Network World - 2002-12-09

For more than 20 years, Network World has been the premier provider of information, intelligence and insight for network and IT executives responsible for the digital nervous systems of large organizations. Readers are responsible for designing, implementing and managing the voice, data and video systems their companies use to support everything from business critical applications to employee collaboration and electronic commerce.

Linear Models and Time-Series Analysis - Marc S. Paolella 2018-12-17

A comprehensive and timely edition on an emerging new trend in time series Linear Models and Time-Series Analysis: Regression, ANOVA, ARMA and GARCH sets a strong foundation, in terms of distribution theory, for the linear model (regression and ANOVA), univariate time series analysis (ARMAX and GARCH), and some multivariate models associated primarily with modeling financial asset returns (copula-based structures and the discrete mixed normal and Laplace). It builds on the author's previous book, Fundamental Statistical Inference: A Computational Approach, which introduced the major concepts of statistical inference. Attention is explicitly paid to application and numeric computation, with examples of Matlab code throughout. The code offers a framework for discussion and illustration of numerics, and shows the mapping from theory to computation. The topic of time series analysis is on firm footing, with numerous textbooks and research journals dedicated to it. With respect to the subject/technology, many chapters in Linear Models and Time-Series Analysis cover firmly entrenched topics (regression and ARMA). Several others are dedicated to very modern methods, as used in empirical finance, asset pricing, risk management, and portfolio optimization, in order to address the severe change in performance of many pension funds, and changes in how fund managers work. Covers traditional time series analysis with new guidelines Provides access to cutting edge topics that are at the forefront of financial econometrics and industry Includes latest developments and topics such as financial returns data, notably also in a multivariate context Written by a leading expert in time series analysis Extensively classroom tested Includes a tutorial on SAS Supplemented with a companion website containing numerous Matlab programs Solutions to most exercises are provided in the book Linear Models and Time-Series Analysis: Regression, ANOVA, ARMA and GARCH is suitable for advanced masters students in statistics and quantitative finance, as well as doctoral students in economics and finance. It is also useful for quantitative financial practitioners in large financial institutions and smaller finance outlets.

Advanced Mathematics and Mechanics Applications Using MATLAB, Third Edition - David Halpern 2002-09-17

Since its introduction in 1984, MATLAB's ever-growing popularity and functionality have secured its position as an industry-standard software package. The user-friendly, interactive environment of MATLAB 6.x, which includes a high-level programming language, versatile graphics capabilities, and abundance of intrinsic functions, helps users focus on their applications rather than on programming errors. MATLAB has now leapt far ahead of FORTRAN as the software of choice for engineering applications.

Knock 'em Dead Resumes - Martin Yate 2016-11-04

"A killer resume gets more job interviews."

The Heston Model and its Extensions in Matlab and C# - Fabrice D. Rouah 2013-08-01

Tap into the power of the most popular stochastic volatilitymodel for pricing equity derivatives Since its introduction in 1993, the Heston model has become apopular model for pricing equity derivatives, and the most popularstochastic volatility model in financial engineering. This vitalresource provides a thorough derivation of the original model, andincludes the most important extensions and refinements that haveallowed the model to produce option prices that are more accurateand volatility surfaces that better reflect market conditions. Thebook's material is drawn from research papers and many of themodels covered and the computer codes are unavailable from othersources. The book is light on theory and instead highlights theimplementation of the models. All of the models found here havebeen coded in Matlab and C#. This reliable resource offers anunderstanding of how the original model was derived from Ricattiequations, and shows how to implement implied and local volatility,Fourier methods applied to the model, numerical integrationschemes, parameter estimation, simulation schemes, Americanoptions, the Heston model with time-dependent parameters, finitedifference methods for the Heston PDE, the Greeks, and the doubleHeston model. A groundbreaking book dedicated to the exploration of theHeston model—a popular model for pricing equityderivatives Includes a companion website, which explores the Heston modeland its extensions all coded in Matlab and C# Written by Fabrice Douglas Rouah a quantitative analyst whospecializes in financial modeling for derivatives for pricing andrisk management Engaging and informative, this is the first book to dealexclusively with the Heston Model and includes code in Matlab andC# for pricing under the model, as well as code for parameterestimation, simulation, finite difference methods, Americanoptions, and more.

Foundations of Computational Finance with MATLAB - Ed McCarthy 2018-06-13

Graduate from Excel to MATLAB® to keep up with the evolution of finance data Foundations of Computational Finance with MATLAB® is an introductory text for both finance professionals looking to branch out from the spreadsheet, and for programmers who wish to learn more about finance. As financial data grows in volume and complexity, its very nature has changed to the extent that traditional financial calculators and spreadsheet programs are simply no longer enough. Today's analysts need more powerful data solutions with more customization and visualization capabilities, and MATLAB provides all of this and more in an easy-to-learn skillset. This book walks you through the basics, and then shows you how to stretch your new skills to create customized solutions. Part I demonstrates MATLAB's capabilities as they apply to traditional finance concepts, and PART II shows you how to create interactive and reusable code, link with external data sources, communicate graphically, and more. Master MATLAB's basic operations including matrices, arrays, and flexible data structures Learn how to build your own customized solutions when the built-ins just won't do Learn how to handle financial data and industry-specific variables including risk and uncertainty Adopt more accurate modeling practices for portfolios, options, time series, and more MATLAB is an integrated development environment that includes everything you need in one well-designed user interface. Available Toolboxes provide tested algorithms that save you hours of code, and the skills you learn using MATLAB make it easier to learn additional languages if you choose to do so. Financial firms are catching up to universities in MATLAB usage, so this is skill set that will follow you throughout your career. When you're ready to step into the new age of finance, Foundations of Computational Finance with MATLAB provides the expert instruction you need to get started quickly.

Financial Derivative and Energy Market Valuation - Michael Mastro, PhD 2013-02-19

A road map for implementing quantitative financialmodels Financial Derivative and Energy Market Valuation bringsthe application of financial models to a higher level by helpingreaders capture the true behavior of energy markets and relatedfinancial derivatives. The book provides readers with a range ofstatistical and quantitative techniques and demonstrates how toimplement the presented concepts and methods in Matlab®. Featuring an unparalleled level of detail, this unique workprovides the underlying theory and various advanced topics withoutrequiring a prior high-level understanding of mathematics orfinance. In addition to a self-contained treatment of appliedtopics such as modern Fourier-based analysis and affine transforms,Financial Derivative and Energy Market Valuation also: • Provides the derivation, numerical implementation, anddocumentation of the corresponding Matlab for each topic • Extends seminal works developed over the last four decadesto derive and utilize present-day financial models • Shows how to use applied methods such as fast Fouriertransforms to generate statistical distributions for optionpricing • Includes all Matlab code for readers wishing to replicatethe figures found throughout the book Thorough, practical, and easy to use, Financial Derivativeand Energy Market Valuation is a first-rate guide for readerswho want to learn how to use advanced numerical methods toimplement and apply state-of-the-art financial models. The book isalso ideal for graduate-level courses in quantitative finance,mathematical finance, and financial engineering.

Computerworld - 2002-12-09

For more than 40 years, Computerworld has been the leading source of technology news and information for IT influencers worldwide. Computerworld's award-winning Web site (Computerworld.com), twice-monthly publication, focused conference series and custom research form the hub of the world's largest global IT media network.

Risk Analysis - David Vose 2008-04-28

Risk Analysis concerns itself with the quantification of risk, the modeling of identified risks and how to make decisions from those models. Quantitative risk analysis (QRA) using Monte Carlo simulation offers a powerful and precise method for dealing with the uncertainty and variability of a problem. By providing the building blocks the author guides the reader through the necessary steps to produce an accurate risk analysis model and offers general and specific techniques to cope with most modeling problems. A wide range of solved problems is used to illustrate these techniques and how they can be used together to solve otherwise complex problems.

Modeling and Forecasting Primary Commodity Prices - Walter C. Labys 2017-03-02

Recent economic growth in China and other Asian countries has led to increased commodity demand which has caused price rises and accompanying price fluctuations not only for crude oil but also for the many other raw materials. Such trends mean that world commodity markets are once again under intense scrutiny. This book provides new insights into the modeling and forecasting of primary commodity prices by featuring comprehensive applications of the most recent methods of statistical time series analysis. The latter utilize econometric methods concerned with structural breaks, unobserved components, chaotic discovery, long memory, heteroskedasticity, wavelet estimation and fractional integration. Relevant tests employed include neural networks, correlation dimensions, Lyapunov exponents, fractional integration and rescaled range. The price forecasting involves structural time series trend plus cycle and cyclical trend models. Practical applications focus on the price behaviour of more than twenty international commodity markets.

Novel Financial Applications of Machine Learning and Deep Learning - Mohammad Zoynul Abedin 2023-03-13

This book presents the state-of-the-art applications of machine learning in the finance domain with a focus on financial product modeling, which aims to advance the model performance and minimize risk and uncertainty. It provides both practical and managerial implications of financial and managerial decision support systems which capture a broad range of financial data traits. It also serves as a guide for the implementation of risk-adjusted financial product pricing systems, while adding a significant supplement to the financial literacy of the investigated study. The book covers advanced machine learning techniques, such as Support Vector Machine, Neural Networks, Random Forest, K-Nearest Neighbors, Extreme Learning Machine, Deep Learning Approaches, and their application to finance datasets. It also leverages real-world financial instances to practice business product modeling and data analysis. Software code, such as MATLAB, Python and/or R including datasets within a broad range of financial domain are included for more rigorous practice. The book primarily aims at providing graduate students and researchers with a roadmap for financial data analysis. It is also intended for a broad audience, including academics, professional financial analysts, and policy-makers who are involved in forecasting, modeling, trading, risk management, economics, credit risk, and portfolio management.

Handbook Of Financial Econometrics, Mathematics, Statistics, And Machine Learning (In 4 Volumes) - Cheng-few Lee 2020-07-30

This four-volume handbook covers important concepts and tools used in the fields of financial econometrics, mathematics, statistics, and machine learning. Econometric methods have been applied in asset pricing, corporate finance, international finance, options and futures, risk management, and in stress testing for financial institutions. This handbook discusses a variety of econometric methods, including single equation multiple regression, simultaneous equation regression, and panel data analysis, among others. It also covers statistical distributions, such as the binomial and log normal distributions, in light of their applications to portfolio theory and asset management in addition to their use in research regarding options and futures contracts.In both theory and methodology, we need to rely upon mathematics, which includes linear algebra, geometry, differential equations, Stochastic differential equation (Ito calculus), optimization, constrained optimization, and others. These forms of mathematics have been used to derive capital market line, security market line (capital asset pricing model), option pricing model, portfolio analysis, and others.In recent times, an increased importance has been given to computer technology in financial research. Different computer languages and programming techniques are important tools for empirical research in finance. Hence, simulation, machine learning, big data, and financial payments are explored in this handbook.Led by Distinguished Professor Cheng Few Lee from Rutgers University, this multi-volume work integrates theoretical, methodological, and practical issues based on his years of academic and industry experience.

Numerical Methods in Finance and Economics - Paolo Brandimarte 2013-06-06

A state-of-the-art introduction to the powerful mathematical and statistical tools used in the field of finance The use of mathematical models and numerical techniques is a practice employed by a growing number of applied mathematicians working on applications in finance. Reflecting this development, Numerical Methods in Finance and Economics: A MATLAB?-Based Introduction, Second Edition bridges the gap between financial theory and computational practice while showing readers how to utilize MATLAB?--the powerful numerical computing environment--for financial applications. The author provides an essential foundation in finance and numerical analysis in addition to background material for students from both engineering and economics perspectives. A wide range of topics is covered, including standard numerical analysis methods, Monte Carlo methods to simulate systems affected by significant uncertainty, and optimization methods to find an optimal set of decisions. Among this book's most outstanding features is the integration of MATLAB?, which helps students and practitioners solve relevant problems in finance, such as portfolio management and derivatives pricing. This tutorial is useful in connecting theory with practice in the application of classical numerical methods and advanced methods, while illustrating underlying algorithmic concepts in concrete terms. Newly featured in the Second Edition: * In-depth treatment of Monte Carlo methods with due attention paid to variance reduction strategies * New appendix on AMPL in order to better illustrate the optimization models in Chapters 11 and 12 * New chapter on binomial and trinomial lattices * Additional treatment of partial differential equations with two space dimensions * Expanded treatment within the chapter on financial theory to provide a more thorough background for engineers not familiar with finance * New coverage of advanced optimization methods and applications later in the text Numerical Methods in Finance and Economics: A MATLAB?-Based Introduction, Second Edition presents basic treatments and more specialized literature, and it also uses algebraic languages, such as AMPL, to connect the pencil-and-paper statement of an optimization model with its solution by a software library. Offering computational practice in both financial engineering and economics fields, this book equips practitioners with the necessary techniques to measure and manage risk.

The Calibration of Rating Models - Paul Markus Konrad 2014-01-29

All across Europe, a drama of historical proportions is unfolding as the debt crisis continues to rock the worldwide financial landscape. Whilst insecurity rises, the general public, policy makers, scientists and academics are searching high and low for independent and objective analyses that may help to assess this unusual situation. For more than a century, rating agencies had developed methods and standards to

evaluate and analyze companies, projects or even sovereign countries. However, due to their dated internal processes, the independence of these rating agencies is being questioned, raising conflicts of interests which largely discredit this sector. Stakeholders are debating the enormous economical and political impact of the assessments, the intransparent methodology, the questionable timing of rating announcements, the accuracy and the focus on profitability. This work opens the statistical toolbox used in credit rating and in the validation of its results. After embedding the research field into its institutional and historical context, it presents standard and new techniques necessary to adequately understand the statistical approach in credit rating. It then introduces a new method for the validation of the central output parameter of the rating model, the Probability of Default. To illustrate the practical application, the theoretical considerations are accompanied by an extensive empirical study. The methods presented and developed in this book are easily applicable. Banks and regulators can statistically test the consistency of a rating methodology regarding discriminatory power and calibration quality.
Statistics and Data Analysis for Financial Engineering - David Ruppert 2015-04-21
The new edition of this influential textbook, geared towards graduate or advanced undergraduate students, teaches the statistics necessary for financial engineering. In doing so, it illustrates concepts using financial markets and economic data, R Labs with real-data exercises, and graphical and analytic methods for modeling and diagnosing modeling errors. These methods are critical because financial engineers now have access to enormous quantities of data. To make use of this data, the powerful methods in this book for working with quantitative information, particularly about volatility and risks, are essential. Strengths of this fully-revised edition include major additions to the R code and the advanced topics covered. Individual chapters cover, among other topics, multivariate distributions, copulas, Bayesian computations, risk management, and cointegration. Suggested prerequisites are basic knowledge of statistics and probability, matrices and linear algebra, and calculus. There is an appendix on probability, statistics and linear algebra. Practicing financial engineers will also find this book of interest.
Hedge Fund Modelling and Analysis using MATLAB - Paul Darbyshire 2014-06-03
The second book in Darbyshire and Hampton’s Hedge Fund Modelling and Analysis series, Hedge Fund Modelling and Analysis Using MATLAB® takes advantage of the huge library of built-in functions and suite of financial and analytic packages available to MATLAB®. This allows for a more detailed analysis of some of the more computationally intensive and advanced topics, such as hedge fund classification, performance measurement and mean-variance optimisation. Darbyshire and Hampton’s first book in the series, Hedge Fund Modelling and Analysis Using Excel & and VBA, is seen as a valuable supplementary text to this book. Starting with an overview of the hedge fund industry the book then looks at a variety of commercially available hedge fund data sources. After covering key statistical techniques and methods, the book discusses mean-variance optimisation, hedge fund classification and performance with an emphasis on risk-adjusted return metrics. Finally, common hedge fund market risk management techniques, such as traditional Value-at-Risk methods, modified extensions and expected shortfall are covered. The book’s dedicated website, www.darbyshirehampton.com provides free downloads of all the data and MATLAB® source code, as well as other useful resources. Hedge Fund Modelling and Analysis Using MATLAB® serves as a definitive introductory guide to hedge fund modelling and analysis and will provide investors, industry practitioners and students alike with a useful range of tools and techniques for analysing and estimating alpha and beta sources of return, performing manager ranking and market risk management.
Computational Finance - Francesco Cesarone 2020-06-11
Computational finance is increasingly important in the financial industry, as a necessary instrument for applying theoretical models to real-world challenges. Indeed, many models used in practice involve complex mathematical problems, for which an exact or a closed-form solution is not available. Consequently, we need to rely on computational

techniques and specific numerical algorithms. This book combines theoretical concepts with practical implementation. Furthermore, the numerical solution of models is exploited, both to enhance the understanding of some mathematical and statistical notions, and to acquire sound programming skills in MATLAB®, which is useful for several other programming languages also. The material assumes the reader has a relatively limited knowledge of mathematics, probability, and statistics. Hence, the book contains a short description of the fundamental tools needed to address the two main fields of quantitative finance: portfolio selection and derivatives pricing. Both fields are developed here, with a particular emphasis on portfolio selection, where the author includes an overview of recent approaches. The book gradually takes the reader from a basic to medium level of expertise by using examples and exercises to simplify the understanding of complex models in finance, giving them the ability to place financial models in a computational setting. The book is ideal for courses focusing on quantitative finance, asset management, mathematical methods for economics and finance, investment banking, and corporate finance.
Risk - 2006-07

InfoWorld - 2002-12-09
InfoWorld is targeted to Senior IT professionals. Content is segmented into Channels and Topic Centers. InfoWorld also celebrates people, companies, and projects.
Wall Street & Technology - 2004

Handbook in Monte Carlo Simulation - Paolo Brandimarte 2014-06-20
An accessible treatment of Monte Carlo methods, techniques, and applications in the field of finance and economics Providing readers with an in-depth and comprehensive guide, the Handbook in Monte Carlo Simulation: Applications in Financial Engineering, Risk Management, and Economics presents a timely account of the applicationsof Monte Carlo methods in financial engineering and economics. Written by an international leading expert in thefield, the handbook illustrates the challenges confronting present-day financial practitioners and provides various applicationsof Monte Carlo techniques to answer these issues. The book is organized into five parts: introduction andmotivation; input analysis, modeling, and estimation; random variate and sample path generation; output analysisand variance reduction; and applications ranging from option pricing and risk management to optimization. The Handbook in Monte Carlo Simulation features: An introductory section for basic material on stochastic modeling and estimation aimed at readers who may need a summary or review of the essentials Carefully crafted examples in order to spot potential pitfalls and drawbacks of each approach An accessible treatment of advanced topics such as low-discrepancy sequences, stochastic optimization, dynamic programming, risk measures, and Markov chain Monte Carlo methods Numerous pieces of R code used to illustrate fundamental ideas in concrete terms and encourage experimentation The Handbook in Monte Carlo Simulation: Applications in Financial Engineering, Risk Management, and Economics is a complete reference for practitioners in the fields of finance, business, applied statistics, econometrics, and engineering, as well as a supplement for MBA and graduate-level courses on Monte Carlo methods and simulation.
Advanced Image and Video Processing Using MATLAB - Shengrong Gong 2018-08-21
This book offers a comprehensive introduction to advanced methods for image and video analysis and processing. It covers deraining, dehazing, inpainting, fusion, watermarking and stitching. It describes techniques for face and lip recognition, facial expression recognition, lip reading in videos, moving object tracking, dynamic scene classification, among others. The book combines the latest machine learning methods with computer vision applications, covering topics such as event recognition based on deep learning,dynamic scene classification based on topic model, person re-identification based on metric learning and behavior analysis. It also offers a systematic introduction to image evaluation criteria showing how to use them in different experimental contexts. The

book offers an example-based practical guide to researchers, professionals and graduate students dealing with advanced problems in image analysis and computer vision.

Stock Market Modeling and Forecasting - Xiaolian Zheng 2013-04-05

Stock Market Modeling and Forecasting translates experience in system adaptation gained in an engineering context to the modeling of financial markets with a view to improving the capture and understanding of market dynamics. The modeling process is considered as identifying a dynamic system in which a real stock market is treated as an unknown plant and the identification model proposed is tuned by feedback of the matching error. Like a physical system, a financial market exhibits fast and slow dynamics corresponding to external (such as company value and profitability) and internal forces (such as investor sentiment and commodity prices) respectively. The framework presented here, consisting of an internal model and an adaptive filter, is successful at considering both fast and slow market dynamics. A double selection method is efficacious in identifying input factors influential in market movements, revealing them to be both frequency- and market-dependent. The authors present work on both developed and developing markets in the shape of the US, Hong Kong, Chinese and Singaporean stock markets. Results from all these sources demonstrate the efficiency of the model framework in identifying significant influences and the quality of its predictive ability; promising results are also obtained by applying the model framework to the forecasting of major market-turning periods. Having shown that system-theoretic ideas can form the core of a novel and effective basis for stock market analysis, the book is completed by an indication of possible and likely future expansions of the research in this area.

Hedge Fund Modelling and Analysis using MATLAB - Paul Darbyshire 2014-03-27

The second book in Darbyshire and Hampton's Hedge Fund Modelling and Analysis series, Hedge Fund Modelling and Analysis Using MATLAB® takes advantage of the huge library of built-in functions and suite of financial and analytic packages available to MATLAB®. This allows for a more detailed analysis of some of the more computationally intensive and advanced topics, such as hedge fund classification, performance measurement and mean-variance optimisation. Darbyshire and Hampton's first book in the series, Hedge Fund Modelling and Analysis Using Excel & and VBA, is seen as a valuable supplementary text to this book. Starting with an overview of the hedge fund industry the book then looks at a variety of commercially available hedge fund data sources. After covering key statistical techniques and methods, the book discusses mean-variance optimisation, hedge fund classification and performance with an emphasis on risk-adjusted return metrics. Finally, common hedge fund market risk management techniques, such as traditional Value-at-Risk methods, modified extensions and expected shortfall are covered. The book's dedicated website, www.darbyshirehampton.com provides free downloads of all the data and MATLAB® source code, as well as other useful resources. Hedge Fund Modelling and Analysis Using MATLAB® serves as a definitive introductory guide to hedge fund modelling and analysis and will provide investors, industry practitioners and students alike with a useful range of tools and techniques for analysing and estimating alpha and beta sources of return, performing manager ranking and market risk management.

Modelling Financial Derivatives with MATHEMATICA ® - William T. Shaw 1998-12-10

CD plus book for financial modelling, requires Mathematica 3 or 2.2; runs on most platforms.

Stochastic Simulation and Applications in Finance with MATLAB Programs - Huu Tue Huynh 2011-11-21

Stochastic Simulation and Applications in Finance with MATLAB Programs explains the fundamentals of Monte Carlo simulation techniques, their use in the numerical resolution of stochastic differential equations and their current applications in finance. Building on an integrated approach, it provides a pedagogical treatment of the need-to-know materials in risk management and financial engineering. The book takes readers through the basic concepts, covering the most recent research and problems in the area, including: the quadratic re-sampling technique, the Least Squared Method, the dynamic programming and Stratified State Aggregation technique to price American options, the extreme value simulation technique to price exotic options and the retrieval of volatility method to estimate Greeks. The authors also present modern term structure of interest rate models and pricing swaptions with the BGM market model, and give a full explanation of corporate securities valuation and credit risk based on the structural approach of Merton. Case studies on financial guarantees illustrate how to implement the simulation techniques in pricing and hedging. NOTE TO READER: The CD has been converted to URL. Go to the following website www.wiley.com/go/huyhnstochastic which provides MATLAB programs for the practical examples and case studies, which will give the reader confidence in using and adapting specific ways to solve problems involving stochastic processes in finance.

Robust Equity Portfolio Management - Woo Chang Kim 2015-11-25
A comprehensive portfolio optimization guide, with provided MATLAB code Robust Equity Portfolio Management + Website offers the most comprehensive coverage available in this burgeoning field. Beginning with the fundamentals before moving into advanced techniques, this book provides useful coverage for both beginners and advanced readers. MATLAB code is provided to allow readers of all levels to begin implementing robust models immediately, with detailed explanations and applications in the equity market included to help you grasp the real-world use of each technique. The discussion includes the most up-to-date thinking and cutting-edge methods, including a much-needed alternative to the traditional Markowitz mean-variance model. Unparalleled in depth and breadth, this book is an invaluable reference for all risk managers, portfolio managers, and analysts. Portfolio construction models originating from the standard Markowitz mean-variance model have a high input sensitivity that threatens optimization, spawning a flurry of research into new analytic techniques. This book covers the latest developments along with the basics, to give you a truly comprehensive understanding backed by a robust, practical skill set. Get up to speed on the latest developments in portfolio optimization Implement robust models using provided MATLAB code Learn advanced optimization methods with equity portfolio applications Understand the formulations, performances, and properties of robust portfolios The Markowitz mean-variance model remains the standard framework for portfolio optimization, but the interest in—and need for—an alternative is rapidly increasing. Resolving the sensitivity issue and dramatically reducing portfolio risk is a major focus of today's portfolio manager. Robust Equity Portfolio Management + Website provides a viable alternative framework, and the hard skills to implement any optimization method.

Mathematical Modeling And Computation In Finance: With Exercises And Python And Matlab Computer Codes - Cornelis W Oosterlee 2019-10-29
This book discusses the interplay of stochastics (applied probability theory) and numerical analysis in the field of quantitative finance. The stochastic models, numerical valuation techniques, computational aspects, financial products, and risk management applications presented will enable readers to progress in the challenging field of computational finance.When the behavior of financial market participants changes, the corresponding stochastic mathematical models describing the prices may also change. Financial regulation may play a role in such changes too. The book thus presents several models for stock prices, interest rates as well as foreign-exchange rates, with increasing complexity across the chapters. As is said in the industry, 'do not fall in love with your favorite model.' The book covers equity models before moving to short-rate and other interest rate models. We cast these models for interest rate into the Heath-Jarrow-Morton framework, show relations between the different models, and explain a few interest rate products and their pricing.The chapters are accompanied by exercises. Students can access solutions to selected exercises, while complete solutions are made available to instructors. The MATLAB and Python computer codes used for most tables and figures in the book are made available for both print and e-book users. This book will be useful for people working in the financial industry, for those aiming to work there one day, and for anyone interested in quantitative finance. The topics that are discussed

are relevant for MSc and PhD students, academic researchers, and for quants in the financial industry.