Financial Models Using Simulation and Optimization

Wayne L. Winston 2000 Financial Models Using Simulation and Optimization is an informative hands-on book that shows you how to harness the power of Microsoft Excel and Palisade Corporation’s Decision Tools RM and RISKsolver to solve complicated financial problems. Learn innovative techniques and methods that will give you the edge in solving real-world financial problems. Topics and examples covered in the text include: -- Data Analysis in Excel for forecasting demand and estimating sales, using regression, data tables, optimization and pivot tables -- Optimization with Solver and Evolver for funding pension liabilities, portfolio optimization, fitting the yield curve, generating implied forward rates and immunization against interest rate risk -- Simulation with @RISK for analyzing new products, modeling acquisitions, evaluating Pro Forma Financial Statements and simulating the yield curve, estimating credit risk, valuing financial derivatives using @RISK, including pricing exotic options, finding VAR for a portfolio, VAR and options pricing with correlated stocks, computing VAR for forwards and futures, valuing foreign exchange options and hedging risk, using Delta hedging and valuing real options -- Using Binomial Trees for pricing and finding VAR for an American option and valuing real options -- And Extras such as simulating the NCAA tournament, simulating KENO, analyzing the “birthday problem!” and learning how to link SOLVER and @RISK Experiments in this book have been used in executive training classes at GM, NCR, Price Waterhouse Coopers, Bristol-Myers Squibb, and Eli Lilly. All files discussed in the book are included on a CD-ROM. The step-by-step and teach-by-example approach should make the book suitable for advanced undergraduates. MBAs and most of all practicing finance professionals for both self-study or education classes.

Financial Models Using Simulation and Optimization II

Wayne L. Winston 2008-05-15

Principles of Financial Modelling

Michael Rees 2018-03-19 The comprehensive, broadly-applicable, real-world guide to financial modelling Principles of Financial Modelling – Model Design and Best Practices Using Excel and VBA covers the full spectrum of financial modelling tools and techniques in order to provide practical skills that are grounded in real-world applications. Based on rigorously-tested materials created for consulting projects and for training courses, this book demonstrates how to plan, design and build financial models that are flexible, robust, transparent, and highly applicable to a wide range of planning, forecasting and decision-support contexts. This book integrates theory and practice to provide a high-value resource for anyone wanting to gain a practical understanding of this complex and nuanced topic. Highlights of its content include extensive coverage of: Model design and best practices, including the optimisation of data structures and layout, maximising transparency, balancing complexity with flexibility, dealing with circularity, model audit and error-checking Sensitivity and scenario analysis, simulation, and optimisation Data manipulation and analysis The use and choice of Excel functions and functionality, including advanced functions and those from all categories, as well as VBA and its key areas of application within financial modelling The companion website provides approximately 235 Excel files (screen-clips of most of which are shown in the text), which demonstrate key principles in modelling, as well as providing many examples of the use of Excel functions and VBA macros. These facilitate learning and have a strong emphasis on practical solutions and direct real-world application. For practical instruction, robust technique and clear presentation, Principles of Financial Modelling is the premier guide to real-world financial modelling from the ground up. It provides clear instruction applicable across sectors, settings and countries, and is presented in a well-structured and highly-developed format that is accessible to people with different background.

Financial Modelling

Jörg Kienitz 2012-09-10 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 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, Dupire and other approaches. It also provides pricing and risk-manage of European and American 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 model market. 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.

Financial Modeling with Crystal Ball and Excel

John Charness 2011-08-04 Praise for Financial Modeling with Crystal Ball(r) and Excel(r) “Professor Charnes’s book drives clarity into applied Monte Carlo analysis using examples and tools relevant to real-world finance. The book will prove useful for analysts of all levels and as a supplement to academic courses in multiple disciplines.” - Mark Odermann, Senior Financial Analyst, Microsoft

"Think you really know financial modeling? This is a must-have for power Excel users. Professor Charnes shows how to make more realistic models that result in fewer surprises. Every analyst needs this credibility booster.” - James Franklin, CEO, Decisioneering, Inc. “This book packs a first-year MBA’s worth of financial and business modeling education into a few dozen easy-to-understand examples. Crystal Ball software does the housekeeping, so readers can concentrate on the business decision. A careful reader who works the examples on a computer will master the best general-purpose technology available for working with uncertainty.” - Aaron Brown, Executive Director, Morgan Stanley, author of The Poker Face of Wall Street “Using Crystal Ball and Excel, John Charness takes you step by step, demonstrating a conceptual framework that turns static Excel data and financial models into true risk models. I am astounded by the clarity of the text and the hands-on, step-by-step examples using
Crystal Ball and Excel; Professor Charnes is a masterful teacher, and this is an absolute gem of a book for the generation of analyst. - Brian Watt, Chief Operating Officer, GECC, Inc. "Financial Modeling with Crystal Ball and Excel is a comprehensive, well-written guide to one of the most useful analysis tools available to professional risk managers and quantitative analysts. This is a must-have book for anyone using Crystal Ball, and anyone wanting an overview of basic risk management concepts.” - Paul Dietz, Manager, Quantitative Analysis, Westar Energy
"John Charnes presents an insightful exploration of techniques for analysis and understanding of risk and uncertainty in business cases. By application of real options theory and Monte Carlo simulation to planning, doors are opened to analysis of what used to be impossible, such as modeling the value today of future project choices.” - Bruce Wallace, Nortel

Financial Modeling and Optimization - 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 examples, templates, and hundreds of exercises that allow readers to immediately apply the complex ideas shown through the process of building a flexible, computer-based models for financial planning. This volume provides critical tools for the financial toolbox, then shows how to use them to build successful models.

Hands-On Financial Modeling with Microsoft Excel 2019 - Shumel Oluwa 2019-07-11 Explore the aspects of financial modeling with the help of clear and easy-to-follow instructions and a variety of Excel features, functions, and productivity tips. Key Features A non data professionals guide to exploring Excel's financial functions and pivot tables Learn to prepare various models for income and cash flow statements, and balance sheets. Learn to perform valuations and identify growth drivers with real-world case studies. Book Description Financial modeling is a core skill for anyone who wants to build models in finance. Hands-On Financial Modeling with Microsoft Excel 2019 examines various definitions and relates them to the key features of financial modeling with the help of Excel. This book will help you understand financial modeling concepts using Excel, and provides you with an overview of the steps you should follow to build an integrated financial model. You will explore the design principles, functions, and techniques of building models in a practical manner. Starting with the key concepts of Excel, such as formulas and functions, you will learn about referencing frameworks and other advanced components of Excel for building financial models. Later chapters will help you understand your financial projects, build assumptions, and analyze historical data to develop data-driven models and functional growth drivers. The book takes an intuitive approach to model testing, along with best practices and practical use cases. By the end of this book, you will have examined the data from various use cases, and you will have the skills you need to build financial models to extract the information required to make informed business decisions. What you will learn Identify the growth drivers derived from processing historical data in Excel Use discounted cash flow (DCF) for efficient investment analysis Build a financial model by projecting balance sheets, profit, and loss Apply a Monte Carlo simulation to derive key assumptions for your financial model Prepare detailed asset and debt schedule models in Excel Discover the latest and advanced features of Excel 2019 Calculate profitability ratios using various profit parameters This book is for data professionals, analysts, traders, business owners, and students who want to implement and develop a high in-demand skill of financial modeling in their financial analysis, trading, and valuation work. This book will also help individuals that have and don't have any experience in data and stats, to get started with building financial models. The book assumes working knowledge of Excel.

Introduction to Financial Models for Management and Planning - James R. Morris 2017-05-30 A properly structured financial model can provide decision makers with a powerful tool that helps them identify the consequences of their decisions before they are put into practice. Introduction to Financial Models for Management and Planning, Second Edition enables professionals and students to learn how to develop and use computer-based models for financial planning. This volume provides critical tools for the financial toolbox, then shows how to use them to build successful models.

Corporate and Project Finance Modeling - Edward Bodmer 2014-10-10 A clear and comprehensive guide to financial modeling and valuation with extensive case studies and practice exercises Corporate and Project Finance Modeling takes a clear, coherent approach to a complex and technical topic. Written by a globally-recognized financial and economic consultant, this book provides a thorough explanation of financial modeling and analysis. It explains the practical application of newly-developed techniques. Theoretical discussion, case studies and step-by-step guides allow readers to master many difficult modeling problems and also explain how to build highly structured models from the ground up. The companion website includes downloadable examples, templates, and hundreds of exercises that allow readers to immediately apply the complex ideas discussed. Financial valuation is an in-depth process, involving both objective and subjective parameters. Precise modeling is critical, and thorough, accurate analysis is what bridges the gap from model to value. This book allows readers to gain a true mastery of the principles underlying financial modeling and valuation by helping them to: Develop flexible and accurate value analysis incorporating cash flow waterfalls, depreciation and retirement, updates for new historic periods, and dynamic presentation of scenario and sensitivity analysis; Build customized spreadsheet functions that solve circular logic arising in project and corporate valuation without cumbersome copy and paste macros; Derive accurate measures of normalized cash flow and implied valuation multiples that account for asset life, changing growth, taxes, varying returns and cost of capital; Incorporate stochastic analysis with alternative time series equations and Monte Carlo simulation without add-ins; Understand valuation effects of debt sizing, sculpting, project funding, re-financing, holding periods and credit enhancements. Corporate and Project Finance Modeling provides comprehensive guidance and extensive explanation, making it essential reading for anyone in the field.

Financial Modelling in Python - Shayne Fletcher 2010-10-28 "Fletcher and Gardner have created a comprehensive resource that will be of interest not only to those working in the field of finance, but also to those using numerical methods in other fields such as engineering, physics, and actuarial mathematics. By showing how to combine the high-level elegance, accessibility, and flexibility of Python, with the low-level computational efficiency of C++, in the context of interesting financial modeling problems, they have provided an implementation template which will be useful to others seeking to jointly optimize the use of computational and human resources. They document all the necessary technical details required in order to make external numerical libraries available from within Python, and they contribute a useful library of their own, which will significantly reduce the start-up costs involved in building financial models. This book is a must read for all those with a need to apply numerical methods in the valuation of financial claims." - David Louton, Professor of Finance, Bryant University This book is directed at both industry practitioners and students interested in designing a pricing and risk management framework for financial derivatives using the Python programming language. It is a practical book complete with working, tested code that guides the reader through the process of building a flexible, extensible pricing framework in Python. The pricing frameworks' loosely coupled fundamental components have been designed to facilitate the quick development of new models. Concrete applications to real-world pricing problems are also provided. Topics are introduced gradually, each building on the last. They include basic mathematical algorithms, common algorithms from numerical analysis, trade, market and event data model representations, and lattice and simulation based pricing, and model development. The mathematics presented is kept simple and to the point. The book also provides a host of information on practical technical topics such as C++/Python hybrid development (embedding and extending) and techniques for integrating Python based programs with Microsoft Excel.

Pro Excel Financial Modeling: Tom Sawyer 2009-06-29 Learn the business thinking behind financial modeling and execute what you know effectively using Microsoft Excel. Many believe that sales and profitability projections shown in financial models are the keys to success in attracting investors. The truth is that investors will come up with their own projections. The investor wants to understand the assumptions, structure, and relationships within the modeling of a startup. If the investor is satiated, the entrepreneur has successfully demonstrated a complete understanding of the business side of the enterprise. Pro Excel Financial Modeling provides the keys necessary to learn this thinking and to build the models that will illustrate it. Step-by-step approach to developing financial models in Excel Extensive case studies and Excel templates provided

Financial Forecasting, Analysis, and Modelling - Michael Samonas 2015-03-30 Risk analysis has become critical to modern financial planning. Financial Forecasting, Analysis and Modelling provides a complete framework of long-term financial forecasts in a practical and accessible way, helping finance professionals include uncertainty in their planning and budgeting process. With thorough coverage of financial statement simulation models and clear, concise implementation instruction, this book guides readers step-by-step through the entire projection plan development process. Readers learn the tools, techniques, and special considerations that increase accuracy and smooth the workflow, and develop a more robust analysis process that improves financial strategy. The companion website provides a complete operational model that can be customised to develop financial projections or a range of other key financial measures, giving readers an immediately-applicable tool to facilitate effective decision-making. In the aftermath of the recent financial crisis, the need for experienced financial modelling professionals has steadily increased as organisations rush to adjust to economic volatility and uncertainty. This book provides the deeper level of understanding needed to develop stronger financial planning, with techniques tailored to real-life situations. Develop long-term projections using Excel. Use appropriate models to develop a more proactive strategy. Apply risk and uncertainty projections more accurately. Master the Excel Scenario Manager, Sensitivity Analysis, Monte Carlo Simulation, and more. Risk plays a larger role in financial planning than ever before, and possible outcomes must be measured before decisions are made. Uncertainty has become a critical component in financial planning, and accuracy demands it be used appropriately. With special focus on uncertainty in modelling and planning, Financial Forecasting, Analysis and Modelling is a comprehensive guide to the mechanics of modern finance.

Analyzing Financial Data and Implementing Financial Models Using R - Clifford Ang 2015-04-06 This book is a comprehensive introduction to financial modeling that teaches advanced undergraduate and graduate students in finance and economics how to use R to analyze financial data and implement financial models. This text will show students how to obtain publicly available data, manipulate such data, implement the models, and generate typical output expected for a particular analysis. This text aims to overcome several common obstacles in teaching financial modeling. First, most texts do not provide sufficient data to allow them to implement models from start to finish. In this book, we walk through each step in relatively more detail and show intermediate R output to help students make sure they are implementing the analyses correctly. Second, most books deal with sanitized or clean data that have been organized to suit a particular analysis. Consequently, many students do not know how to deal with real-world data or know how to apply simple data manipulation techniques to get the real-world data into a usable form. This book will expose students to the notion of data checking and make them aware of problems that exist when using real-world data. Third, most classes or texts use expensive commercial software or toolboxes. In this text, we use R to analyze financial data and implement models. R and the accompanying packages used in the text are freely available; therefore, any code or models we implement do not require any additional expenditure on the part of the student. Demonstrating rigorous techniques applied to real-world data, this text covers a wide spectrum of timely and practical issues in financial modeling, including return and risk measurement, portfolio management, options pricing, and fixed income analysis.

Financial Modelling and Asset Valuation with Excel - Morten Helbæk 2013-07-18 Finance is Excel! This book takes you straight into the fascinating world of Excel, the powerful tool for number crunching. In a clear cut language it amalgamates financial theory with Excel providing you with the skills you need to build financial models for private or professional use. A comprehensive knowledge of modelling in Excel is becoming increasingly important in a competitive labour market. The chapters in part one start with the most basic Excel topics such as cell addresses, workbooks, basic formulas, etc. These chapters get more advanced through part one, and takes you in the next to topics such as array formulas, data tables, pivot tables, etc. The other parts of the book discusses a variety of subjects such as net present value, internal rate of return, risk, portfolio theory, CAPM, VaR, project valuation, asset valuation, firm valuation, loan, leasing, stocks, bonds, options, simulation, sensitivity analysis, etc.

Financial Modelling in Practice - Michael Rees 2008 Financial Modelling in Practice: A Concise Guide for Intermediate and Advanced Level is a practical, comprehensive and in-depth guide to financial modelling designed to cover the modelling issues that are relevant to facilitate the construction of robust and readily understandable models. From publisher’s description.

Financial Modelling Using R - Yuxing Yan 2017-07-10 This is a programming book written by a finance professor. This book will be an ideal textbook for many quantitative finance courses, such as (next generation) financial modeling, portfolio theory, empirical research in finance, computational finance, and risk management. The book has three unique characteristics: (1) use free software; (2) combine programming with various finance theories, such as ratio analysis, CAPM, Fama-French 5-factor model, portfolio theory, options and futures, credit analysis, VaR (Value at Risk), and Monte Carlo Simulation; and (3) download and process publicly available financial and economic data from various sources, such as Yahoo! Finance, Google Finance, FRED (Federal Reserve Bank’s Economic Data Library), SEC, and Prof. French’s Data Library

Financial Modelling in Excel For Dummies - Danielle Stein Fairhurst 2017-04-11 Make informed business decisions with the beginner’s guide to financial modeling using Microsoft Excel. Financial Modeling in Excel For Dummies is your comprehensive guide to learning how to create informative, enlightening financial models today. Not a math whiz or an Excel power-user? No problem! All you need is a basic understanding of Excel to start building simple models with practical hands-on exercises and before you know it, you’ll be modeling your way to optimized profits for your business in no time. Excel is powerful, user-friendly, and is most likely already installed on your computer—which is why it has so readily become the go-to tool for financial professionals. This book shows you how to harness Excel’s capabilities to determine profitability, develop budgetary projections, model depreciation, project costs, value assets and more. You’ll learn the fundamental best practices and know-how of financial modeling, and how to put them to work for your business and your clients. You’ll learn the tools and techniques that bring insight out of the numbers, and make better business decisions based on quantitative evidence. You’ll discover that financial modeling is an invaluable resource for your business, and you’ll wonder why you’ve waited this long to learn how! Companies around the world use financial modeling for decision making, to steer strategy, and to develop solutions. This book walks you through the process with clear, expert guidance that assumes little prior knowledge. Learn the six crucial rules to follow when building a successful financial model. Discover how to review and edit an inherited financial model and align it with your business and financial strategy. Solve client problems, identify market projections, and develop business opportunities based on scenario analysis. Create valuable customized templates models that can become a source of competitive advantage From multinational corporations to the mom-and-pop corner store, there isn’t a business around that wouldn’t benefit from financial modeling. No need to buy expensive specialized software—the tools you need are right there in Excel. Financial Modeling in Excel For Dummies gets you up to speed quickly so you can start reaping the benefits today!

Mastering Financial Modeling: A Professional’s Guide to Building Financial Models in Excel - Eric Soubeiga 2013-07-26 All the precision of financial modeling—and none of the complexity Evidence-based decision making is only as good as the external evidence on which it is based. Financial models uncover potential risks on a company’s balance sheet, but the complexity of these instruments has limited their effectiveness now. Mastering Financial Modeling offers a simplified method for building the fast and accurate financial models serious evidence-based decision makers need. What sets this practical guide apart is its “learning-on-the-job” approach. Unlike other books that teach modeling in a vacuum, this superior method uses a diverse collection of case studies to convey each step of the building process. "Learning on the job" connects the dots between the proper Excel
Financial Modelling and Valuation - Paul Pignataro 2013-07-10 Written by the Founder and CEO of the prestigious New York School of Finance, this book schools you in the fundamental tools for accurately assessing the soundness of a stock investment. Built around a full-length case study of Wal-Mart, it shows you how to perform an in-depth analysis of that company's financial standing, walking you through all the steps of developing a sophisticated financial model as done by professional Wall Street analysts. You will construct a full scale financial model and valuation step-by-step as you page through the book. You will estimate the stock's undervaluation. Since the first run of the analysis, the stock has increased 35 percent. Re-evaluating Wal-Mart 9 months later, we will step through the techniques utilized by Wall Street analysts to build models on and properly value business entities. Step-by-step financial modeling - taught using Wall Street models, you will construct the model step by step as you page through the book. Hot keys and explicit Excel instructions aid even the novice excel modeler. Model built complete with Income Statement, Cash Flow Statement, Balance Sheet, Balance Sheet Balancing Techniques, Depreciation Schedule (complete with accelerating depreciation and deferring taxes), working capital schedule, debt schedule, handling circular references, and automatic debt pay downs. Illustrative concepts including detailing model flows help aid in conceptual understanding. Concepts are reiterated and honed, perfect for a novice yet detailed enough for a professional. Model built direct from Wal-Mart public filings, searching through notes, performing research, illustrating techniques to formulate projections. Includes in-depth coverage of valuation techniques commonly used by Wall Street professionals. Illustrative comparable company analyses - built the right way, direct from historical financials, calculating LTM (Last Twelve Month) data, calendarization, and properly smoothing EBIDTA and Net Income. Precedent transactions analysis - detailing how to extract proper metrics from relevant proxy statements Discounted cash flow analysis - simplifying and illustrating how a DCF is utilized, how unlevered free cash flow is derived, and the meaning of weighted average cost of capital (WACC) Step-by-step we will come upon a valuation on Wal-Mart Chapter end questions, practice models, additional case studies and common interview questions (found in the companion website) help solidify the techniques honed in the book, ideal for universities or business students looking to break into the investment banking field.

Financial Modelling with Jump Processes - Peter Tankov 2003-12-30 WINNER of a Riskbook.com Best of 2004 Book Award! During the last decade, financial models based on jump processes have acquired increasing popularity due to their risk management and option pricing. Much has been published on the subject, but the technical nature of most papers makes them difficult for nonspecialists to understand, and the mathematical tools required for applications can be intimidating. Potential users often get the impression that jump and Lévy processes are beyond their reach. Financial Modelling with Jump Processes shows that this is not so. It provides a self-contained overview of the theoretical, numerical, and empirical aspects involved in using jump processes in financial modelling, and it does so in terms within the grasp of nonspecialists. The introduction of new mathematical tools is motivated by their use in the modelling process, and precise mathematical statements of results are accompanied by intuitive explanations. Topics covered in this book include: jump-diffusion models, Lévy processes, stochastic calculus for jump processes, pricing and hedging in incomplete markets, implied volatility smiles, time-inhomogeneous jump processes and stochastic volatility models with jumps. The authors illustrate the mathematical concepts with many numerical and empirical examples and provide the details of numerical implementation of pricing and calibration algorithms. This book demonstrates that the concepts and tools necessary for understanding and implementing models with jumps can be more intuitive than those involved in the Black Scholes and diffusion models. If you have even a basic familiarity with quantitative methods in finance, Financial Modelling with Jump Processes will give you a valuable new set of tools for modelling market fluctuations.

Simulation Modeling Using @Risk - Wayne L. Winston 1996

Option Pricing and Estimation of Financial Models with R - Stefano M. Iacus 2011-02-23 Presents inference and simulation of stochastic process in the field of model calibration for financial times series, model conformation, option pricing. introduces option pricing. Introduces the notion of arbitrage theory and goes on to explain how to model financial times series with continuous models, how to calibrate them from discrete data and further covers option pricing with one or more underlying assets based on these models. Analysis and implementation of models goes beyond the standard Black and Scholes framework and includes Markov switching.
Financial Modeling: Joachim Häcker 2017-12-11 This book provides a comprehensive introduction to financial modeling, where the reader is led step-by-step through the implementation of models. It includes detailed guidance on the essential modeling concepts around the four core financial activities in the modern financial industry: investment banking; corporate finance; portfolio management; and financial derivatives. Written in a highly practical, market-focused manner, it gives step-by-step guidance on modeling practical problems in a structured manner. Quick and interactive learning is assured due to the structure as a training course which includes applied examples that are easy to follow. All applied examples contained in the book can be reproduced step by step with the help of the Excel files. The content of this book serves as the foundation for the training course Financial Modeler. In an industry that is becoming increasingly complex, financial modeling is a key skill for practitioners across all key sectors of finance and banking, where complicated problems often need to be solved quickly and clearly. This book will equip readers with the basic modeling skills required across the industry today.

Quantitative Finance: Matt Davison 2014-05-08 Teach Your Students How to Become Successful Working Quants Quantitative Finance: A Simulation-Based Introduction Using Excel provides an introduction to financial mathematics for students in applied mathematics, financial engineering, actuarial science, and business administration. The text not only enables students to practice with the basic techniques of financial mathematics, but it also helps them gain significant intuition about what the techniques mean, how they work, and what happens when they stop working. After introducing risk, return, decision making under uncertainty, and traditional discounted cash flow project analysis, the book covers mortgages, bonds, and annuities using a blend of Excel simulation and difference equation or algebraic formalism. It then looks at how interest rate markets work and how to model bond prices before addressing mean variance portfolio optimization, the capital asset pricing model, options, and value at risk (VaR). The author next focuses on binomial model tools for pricing options and the analysis of discrete random walks. He also introduces Brownian motion as a non-probabilistic way and explains how to simulate geometric Brownian motion. The text proceeds to thoroughly discuss options pricing, mostly in continuous time. It concludes with chapters on stochastic models of the yield curve and incomplete markets using simple discrete models. Accessible to students with a relatively modest level of mathematical background, this book will guide your students in becoming successful quants. It uses both hand calculations and Excel spreadsheets to analyze many examples from simple bond portfolios. The spreadsheets are available on the book’s CRC Press web page.

Financial Modeling with Microsoft Excel®: Scott Proctor 2004-10-28 A comprehensive guide to building financial models Building Financial Models with Microsoft Excel® + CD-ROM provides beginning or intermediate level computer users with step-by-step instructions on building financial models using Microsoft Excel—the most popular spreadsheet program available. The accompanying CD-ROM contains Excel workbooks that track the course of the book and allow readers to build their own financial models. This comprehensive resource also covers important topics such as the concept of valuation, the concept of sensitivity analysis, the concepts of contribution margin and financial ratios and the basics of building and using a Capitalization Table. K. Scott Proctor, CFA, is the Director of Investor Analytics at SNL Financial, a financial information provider.

Structured Financial Modeling with Object-Oriented VBA: Evan Tick 2011-07-28 A detailed look at how object-oriented VBA should be used to model complex financial structures This guide helps readers overcome the difficult task of modeling complex financial structures and bridges the gap between professional C++/Java programmers writing production models and front-office analysts building Excel spreadsheet models. It reveals how to model financial structures using object-oriented VBA in an Excel environment, allowing desk-based analysts to quickly produce flexible and robust models. Filled with in-depth insight and expert advice, it skillfully illustrates the art of object-oriented programming for the explicit purpose of modeling structured products. Residential mortgage securitization is used as a unifying example throughout the text.

Financial Models and Simulation- D. Chorafas 1995-05-17 Financial analysis, modeling, simulation and knowledge engineering have become essential to the survival of every enterprise. This thorough and comprehensive book looks at the development and use of financial models for analysis and decision-making, showing the reader how to apply these methods in his or her own work.

Computational Finance- Francesco Cesaroni 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.

Building Financial Models with Microsoft Excel®: Scott Proctor 2004-10-28 A comprehensive guide to building financial models Building Financial Models with Microsoft Excel® + CD-ROM provides beginning or intermediate level computer users with step-by-step instructions on building financial models using Microsoft Excel—the most popular spreadsheet program available. The accompanying CD-ROM contains Excel workbooks that track the course of the book and allow readers to build their own financial models. This comprehensive resource also covers important topics such as the concept of valuation, the concept of sensitivity analysis, the concepts of contribution margin and financial ratios and the basics of building and using a Capitalization Table. K. Scott Proctor, CFA, is the Director of Investor Analytics at SNL Financial, a financial information provider.

Structured Financial Modeling with Object-Oriented VBA: Evan Tick 2011-07-28 A detailed look at how object-oriented VBA should be used to model complex financial structures This guide helps readers overcome the difficult task of modeling complex financial structures and bridges the gap between professional C++/Java programmers writing production models and front-office analysts building Excel spreadsheet models. It reveals how to model financial structures using object-oriented VBA in an Excel environment, allowing desk-based analysts to quickly produce flexible and robust models. Filled with in-depth insight and expert advice, it skillfully illustrates the art of object-oriented programming for the explicit purpose of modeling structured products. Residential mortgage securitization is used as a unifying example throughout the text.

Financial Models and Simulation- D. Chorafas 1995-05-17 Financial analysis, modeling, simulation and knowledge engineering have become essential to the survival of every enterprise. This thorough and comprehensive book looks at the development and use of financial models for analysis and decision-making, showing the reader how to apply these methods in his or her own work.

Computational Finance- Francesco Cesaroni 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.

Business Risk and Simulation Modelling in Practice-Michael Rees 2015-08-05 The complete guide to the principles and practice of risk quantification for business applications. The assessment and quantification of risk provide an indispensable part of robust decision-making; to be effective, many professionals need a firm grasp of both the fundamental concepts and of the tools of the trade. Business Risk and Simulation Modelling in Practice is a comprehensive, in–depth, and practical guide that aims to help business risk managers, modelling analysts and general management to understand, conduct and use quantitative risk assessment and uncertainty modelling in their own situations. Key content areas include: Detailed descriptions of risk assessment processes, their objectives and uses, possible approaches to risk quantification, and their associated decision-benefits and organisational challenges. Principles and techniques in the design of risk models, including the similarities and differences with traditional financial models, and the enhancements that risk modelling can provide. In depth coverage of modern techniques such as simulation and Monte Carlo methods. Second edition with coverage of risk exposure and selection of probability distributions, the creation of dependency relationships, the alignment of risk modelling activities with general risk assessment processes, and a range of Excel modelling techniques. The implementation of simulation techniques using both Excel/VBA macros and the @RISK Excel add-in. Each platform may be...
Advanced Modelling in Finance using Excel and VBA—Mary Jackson 2006-08-30 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 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 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.

Using Excel for Business and Financial Modelling—Danielle Stein Fairhurst 2019-04-01 A hands-on guide to using Excel in the business context First published in 2012, Using Excel for Business and Financial Modelling contains step-by-step instructions of how to solve common business problems using financial models, including downloadable Excel templates, a list of shortcuts and tips and techniques you can apply straight away. Whilst there are many hundreds of tools, features and functions in Excel, this book focuses on the topics most relevant to finance professionals. It covers these features in detail from a practical perspective, but also puts them in context by applying them to practical examples in the real world. Learn to create financial models to help make business decisions whilst applying modelling best practice methodology, tools and techniques. The book provides the perfect mix of practice and theory: Helps you become a DIY Excel modelling specialist Includes updates for Excel 2019/365 and Excel for Mac May be used as an accompaniment to the author’s online and face-to-face training courses Many people are often overwhelmed by the hundreds of tools in Excel, and this book gives clarity to the ones you need to know in order to perform your job more efficiently. This book also demystifies the technical, design, logic and financial skills you need for business and financial modelling.

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.

Simulation in Computational Finance and Economics: Tools and Emerging Applications—Alexandrova-Kabadjova, Biliana 2012-08-31 Simulation has become a tool difficult to substitute in many scientific areas like manufacturing, medicine, telecommunications, games, etc. Finance is one of such areas where simulation is a commonly used tool; for example, we can find Monte Carlo simulation in many financial applications like market risk analysis, portfolio optimization, credit risk related applications, etc. Simulation in Computational Finance and Economics: Tools and Emerging Applications presents a thorough collection of works, covering several rich and highly productive areas of research including Risk Management, Agent-Based Simulation, and Payment Methods and Systems, topics that have found new motivations after the strong recession experienced in the last few years. Despite the fact that simulation is widely accepted as a prominent tool, dealing with a simulation-based project requires specific management abilities of the researchers. Economic researchers will find an excellent reference to introduce them to the computational simulation models. The works presented in this book can be used as an inspiration for economic researchers interested in creating their own computational models in their respective fields.