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Paul Wilmott on Quantitative Finance-Paul Wilmott 2013-10-25 Paul Wilmott on Quantitative Finance, Second Edition provides a thoroughly updated look at derivatives and financial engineering, published in three volumes with additional CD-ROM. Volume 1: Mathematical and Financial Foundations; Basic Theory of Derivatives; Risk and Return. The reader is introduced to the fundamental mathematical tools and financial concepts needed to understand quantitative finance, portfolio management and derivatives. Parallels are drawn between the respectable world of investing and the not-so-respectable world of gambling. Volume 2: Exotic Contracts and Path Dependency; Fixed Income Modeling and Derivatives; Credit Risk In this volume the reader sees further applications of stochastic mathematics to new financial problems and different markets. Volume 3: Advanced Topics; Numerical Methods and Programs. In this volume the reader enters territory rarely seen in textbooks, the cutting-edge research. Numerical methods are also introduced so that the models can now all be accurately and quickly solved. Throughout the volumes, the author has included numerous Bloomberg screen dumps to illustrate in real terms the points he raises, together with essential Visual Basic code, spreadsheet explanations of the models, the reproduction of term sheets and option classification tables. In addition to the practical orientation of the book the author himself also appears throughout the book—in cartoon form, readers will be relieved to hear—to personally highlight and explain the key sections and issues discussed. Note: CD-ROM/DVD and other supplementary materials are not included as part of eBook file.

The Quants-Scott Patterson 2010-02-02 With the immediacy of today’s NASDAQ close and the timeless power of a Greek tragedy, The Quants is at once a masterpiece of explanatory journalism, a gripping tale of ambition and hubris, and an ominous warning about Wall Street’s future. In March of 2006, four of the world’s richest men sipped champagne in an opulent New York hotel. They were preparing to compete in a poker tournament with million-dollar stakes, but those numbers meant nothing to them. They were accustomed to risking billions. On that night, these four men and their cohorts were the new kings of Wall Street. Muller, Griffin, Asness, and Weinstein were among the best and brightest of a new breed, the quants. Over the prior twenty years, this species of math whiz--technocrats who make billions not with gut calls or fundamental analysis but with formulas and high-speed computers--had usurped the testosterone-fueled, kill-or-be-killed risk-takers who’d long been the alpha males the world’s largest casino. The quants helped create a digitized money-trading machine that could shift billions around the globe with the click of a mouse. Few realized, though, that in creating this unprecedented machine, men like Muller, Griffin, Asness and Weinstein had sowed the seeds for history’s greatest financial disaster. Drawing on unprecedented access to these four number-crunching titans, The Quants tells the inside story of what they thought and felt in the days and weeks when they helplessly watched much of their net worth vaporize--and wondered just how their mind-bending formulas and genius-level IQ’s had led them so wrong, so fast.

Advanced Quantitative Finance with C++-Alonso Peña, Ph.D. 2014-06-25 The book takes the reader through a fast but structured crash-course in quantitative finance, from theory to practice. If you are a quantitative analyst, risk manager, actuary, or a professional working in the field of quantitative finance and want a quick hands-on introduction to the pricing of financial derivatives, this book is ideal for you. You should be familiar with the basic programming concepts and C++ programming language. You should also be acquainted with calculus of undergraduate level.

Machine Learning and Data Science Blueprints for Finance-Hariom Tatsat 2020-10-01 Over the next few decades, machine learning and data science will transform the finance industry. With this practical book, analysts, traders, researchers, and developers will learn how to build machine learning algorithms crucial to the industry. You’ll examine ML concepts and over 20 case studies in supervised, unsupervised, and reinforcement learning, along with natural language processing (NLP). Ideal for professionals working at hedge funds, investment and retail banks, and fintech firms, this book also delves deep into portfolio management, algorithmic trading, derivative pricing, fraud detection, asset price prediction, sentiment analysis, and chatbot development. You’ll explore real-life problems faced by practitioners and learn scientifically sound solutions supported by code and examples. This book covers: Supervised learning regression-based models for trading strategies, derivative pricing, and portfolio management Supervised learning classification-based models for credit default risk prediction, fraud detection, and trading strategies Dimensionality reduction techniques with case studies in portfolio management, trading strategy, and yield curve construction Algorithms and clustering techniques for finding similar objects, with case studies in trading strategies and portfolio management Reinforcement learning models and techniques used for building trading strategies, derivatives hedging, and portfolio management NLP techniques using Python libraries such as NLTK and scikit-learn for transforming text into meaningful representations

Risk-Sensitive Investment Management-Mark H A Davis 2014-07-21 Over the last two decades, risk-sensitive control has evolved into an innovative and successful framework for solving dynamically a wide range of practical investment management problems. This book shows how to use risk-sensitive investment management to manage portfolios against an investment benchmark, with constraints, and with assets and liabilities. It also addresses model implementation issues in parameter estimation and numerical methods. Most importantly, it shows how to integrate jump-diffusion processes which are crucial to model market crashes. With its emphasis on the interconnection between mathematical techniques and real-world problems, this book will be of interest to both academic researchers and money managers. Risk-sensitive investment management links stochastic control and portfolio management. Because of its distinct emphasis on integrating advanced theoretical concepts into practical dynamic investment management tools, this book stands out from the existing literature in fundamental ways. It goes beyond mainstream research in portfolio management in a traditional static setting. The theoretical developments build on contemporary research in stochastic control theory, but are informed throughout by the need to construct an effective and practical framework for dynamic portfolio management. This book fills a gap in the literature by connecting mathematical techniques with the real world of investment management. Readers seeking to solve key problems such as benchmarked asset management or asset and liability management will certainly find it useful. Contents:Diffusion Models:The Merton ProblemRisk-Sensitive Asset ManagementManaging Against a BenchmarkAsset and Liability ManagementInvestment ConstraintsInfinite Horizon ProblemsJump-Diffusion Models:Jumps in Asset PricesGeneral Jump-Diffusion SettingFund Separation and Fractional Kelly StrategiesManaging Against a Benchmark: Jump-Diffusion CaseAsset and Liability Management: Jump-Diffusion CaseImplementation:Factor and Securities ModelsCase StudiesNumerical MethodsFactor Estimation: Filtering and Black-Litterman Readership: Professionals, researchers, academics and graduate students in the field of investment management, stochastic optimization, stochastic analysis and probability, and quantitative finance. Key Features:Integrates advanced theoretical concepts into practical dynamic investmentDiscusses practical issues that will be relevant to practitioners, including parameter estimation, investment benchmarks, asset and liabilities management (ALM), investment constraints, and the Kelly criterionPresents a thorough treatment of jump diffusion models, including latest developments regarding classical solutions to jump diffusion control problemsWritten by professors with extensive experience on risk sensitive asset management and the relevant financial industry experienceKeywords:Stochastic Control;Risk Sensitive Control;Dynamic Investment Management;Benchmarked Asset Management;Asset and Liability Management;Jump Diffusion Processes;LÃ©vy Processes;Hamiltonâ Jacobiâ Bellman Equations;Classical Solutions;Viscosity Solutions;Kelly Criterion

Python for Finance-Yves Hilpisch 2018-12-05 The financial industry has recently adopted Python at a tremendous rate, with some of the largest investment banks and hedge funds using it to build core trading and risk management systems. Updated for Python 3, the second edition of this hands-on book helps you get started with the language, guiding developers and quantitative analysts through Python libraries and tools for building financial applications and interactive financial analytics. Using practical examples throughout the book, author Yves Hilpisch also shows you how to develop a full-fledged framework for Monte Carlo simulation-based derivatives and risk analytics, based on a large, realistic case study. Much of the book uses interactive IPython Notebooks.

Derivatives Analytics with Python-Yves Hilpisch 2015-08-03 Supercharge options analytics and hedging using the power of Python Derivatives Analytics with Python shows you how to implement market-consistent valuation and hedging approaches using advanced financial models, efficient numerical techniques, and the powerful capabilities of the Python programming language. This unique guide offers detailed explanations of all theory, methods, and processes, giving you the background and tools necessary to value stock index options from a sound foundation. You'll find and use self-contained Python scripts and modules and learn how to apply Python to advanced data and derivatives analytics as you benefit from the 5,000+ lines of code that are provided to help you reproduce the results and graphics presented. Coverage includes market data analysis, risk-neutral valuation, Monte Carlo simulation, model calibration, valuation, and dynamic hedging, with models that exhibit stochastic volatility, jump components, stochastic short rates, and more. The companion website features all code and IPython Notebooks for immediate execution and automation. Python is gaining ground in the derivatives analytics space, allowing institutions to quickly and efficiently deliver portfolio, trading, and risk management results. This book is the finance professional's guide to exploiting Python's capabilities for efficient and performing derivatives analytics. Reproduce major stylized facts of equity and options markets yourself Apply Fourier transform techniques and advanced Monte Carlo pricing Calibrate advanced option pricing models to market data Integrate advanced models and numeric methods to dynamically hedge options Recent developments in the Python ecosystem enable analysts to implement analytics tasks as performing as with C or C++, but using only about one-tenth of the code or even less. Derivatives Analytics with Python — Data Analysis, Models, Simulation, Calibration and Hedging shows you what you need to know to supercharge your derivatives and risk analytics efforts.

Derivatives-Espen Gaarder Haug 2013-10-18 Derivatives Models on Models takes a theoretical and practical look at some of the latest and most important ideas behind derivatives pricing models. In each chapter the author highlights the latest thinking and trends in the area. A wide range of topics are covered, including valuation methods on stocks paying discrete dividend, Asian options, American barrier options, Complex barrier options, reset options, and electricity derivatives. The book also discusses the latest ideas surrounding finance like the robustness of dynamic delta hedging, option hedging, negative probabilities and space-time finance. The accompanying CD-ROM with additional Excel sheets includes the mathematical models covered in the book. The book also includes interviews with some of the world’s top names in the industry, and an insight into the history behind some of the greatest discoveries in quantitative finance. Interviewees include: Clive Granger, Nobel Prize winner in Economics 2003, on Cointegration Nassim Taleb on Black Swans Stephen Ross on Arbitrage Pricing Theory Emanuel Derman the Wall Street Quant Edward Thorp on Gambling and Trading Peter Carr the Wall Street Wizard of Option Symmetry and Volatility Aaron Brown on Gambling, Poker and Trading David Bates on Crash and Jumps Andrei Khrennikov on Negative Probabilities Elie Ayache on Option Trading and Modeling Peter Jaeckel on Monte Carlo Simulation Alan Lewis on Stochastic Volatility and Jumps Paul Wilmott on Paul Wilmott Knut Aase on Catastrophes and Financial Economics Eduardo Schwartz the Yoga Master of Quantitative Finance Bruno Dupire on Local and Stochastic Volatility Models

Option Pricing-Paul Wilmott 1993 Análisis de los diferentes modelos matemáticos aplicados a los precios de opción. Se estudian además los elementos matemáticos básicos necesarios para el análisis de la ecuación Black-Scholes.

Python for Finance-Yves Hilpisch 2014-12-11 The financial industry has adopted Python at a tremendous rate recently, with some of the largest investment banks and hedge funds using it to build core trading and risk management systems. This hands-on guide helps both developers and quantitative analysts get started with Python, and guides you through the most important aspects of using Python for quantitative finance. Using practical examples through the book, author Yves Hilpisch also shows you how to develop a full-fledged framework for Monte Carlo simulation-based derivatives and risk analytics, based on a large, realistic case study. Much of the book uses interactive IPython Notebooks, with topics that include: Fundamentals: Python data structures, NumPy array handling, time series analysis with pandas, visualization with matplotlib, high performance I/O operations with PyTables, date/time information handling, and selected best practices Financial topics: mathematical techniques with NumPy, SciPy and SymPy such as regression and optimization; stochastics for Monte Carlo simulation, Value-at-Risk, and Credit-Value-at-Risk calculations; statistics for normality tests, mean-variance portfolio optimization, principal component analysis (PCA), and Bayesian regression Special topics: performance Python for financial algorithms, such as vectorization and parallelization, integrating Python with Excel, and building financial applications based on Web technologies

A Primer for the Mathematics of Financial Engineering-Dan Stefanica 2011

Mathematical Methods-Riaz Ahmad 2011-05-13

Financial Calculus-Martin Baxter 1996-09-19 The rewards and dangers of speculating in the modern financial markets have come to the fore in recent times with the collapse of banks and bankruptcies of public corporations as a direct result of ill-judged investment. At the same time, individuals are paid huge sums to use their mathematical skills to make well-judged investment decisions. Here now is the first rigorous and accessible account of the mathematics behind the pricing, construction and hedging of derivative securities. Key concepts such as martingales, change of measure, and the Heath-Jarrow-Morton model are described with mathematical precision in a style tailored for market practitioners. Starting from discrete-time hedging on binary trees, continuous-time stock models (including Black-Scholes) are developed. Practicalities are stressed, including examples from stock, currency and interest rate markets, all accompanied by graphical illustrations with realistic data. A full glossary of probabilistic and financial terms is provided. This unique book will be an essential purchase for market practitioners, quantitative analysts, and derivatives traders.

Derivatives-Paul Wilmott 1998-12-08 Derivatives by Paul Wilmott provides the most comprehensive and accessible analysis of the art of science in financial modeling available. Wilmott explains and challenges many of the tried and tested models while at the same time offering the reader many new and previously unpublished ideas and techniques. Paul Wilmott has produced a compelling and essential new work in this field. The basics of the established theories-such as stochastic calculus, Black-Scholes, binomial trees and interest-rate models-are covered in clear and precise detail, but Derivatives goes much further. Complex models-such as path dependency, non-probabilistic models, static hedging and quasi-Monte Carlo methods-are introduced and explained to a highly sophisticated level. But theory in itself is not enough, an understanding of the role the techniques play in the daily world of finance is also examined through the use of spreadsheets, examples and the inclusion of Visual Basic programs. The book is divided into six parts: Part One: acts as an introduction and explanation of the fundamentals of derivatives theory and practice, dealing with the equity, commodity and currency worlds. Part Two: takes the mathematics of Part One to a more complex level, introducing the concept of path dependency. Part Three: concerns extensions of the Black-Scholes world, both classic and modern. Part Four: deals with models for fixed-income products. Part Five: describes models for risk management and measurement. Part Six: delivers the numerical methods required for implementing the models described in the rest of the book. Derivatives also includes a CD containing a wide variety of implementation material related to the book in the form of spreadsheets and executable programs together with resource material such as demonstration software and relevant contributed articles. At all times the style remains readable and compelling making Derivatives the essential book on every finance shelf.

Asset Price Dynamics, Volatility, and Prediction-Stephen J. Taylor 2011-02-11 This book shows how current and recent market prices convey information about the probability distributions that govern future prices. Moving beyond purely theoretical models, Stephen Taylor applies methods supported by empirical research of equity and foreign exchange markets to show how daily and more frequent asset prices, and the prices of option contracts,

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can be used to construct and assess predictions about future prices, their volatility, and their probability distributions. Stephen Taylor provides a comprehensive introduction to the dynamic behavior of asset prices, relying on finance theory and statistical evidence. He uses stochastic processes to define mathematical models for price dynamics, but with less mathematics than in alternative texts. The key topics covered include random walk tests, trading rules, ARCH models, stochastic volatility models, high-frequency datasets, and the information that option prices imply about volatility and distributions. Asset Price Dynamics, Volatility, and Prediction is ideal for students of economics, finance, and mathematics who are studying financial econometrics, and will enable researchers to identify and apply appropriate models and methods. It will likewise be a valuable resource for quantitative analysts, fund managers, risk managers, and investors who seek realistic expectations about future asset prices and the risks to which they are exposed.

Frequently Asked Questions in Quantitative Finance-Paul Wilmott 2010-07-29 Getting agreement between finance theory and finance practice is important like never before. In the last decade the derivatives business has grown to a staggering size, such that the outstanding notional of all contracts is now many multiples of the underlying world economy. No longer are derivatives for helping people control and manage their financial risks from other business and industries, no, it seems that the people are toiling away in the fields to keep the derivatives market afloat! (Apologies for the mixed metaphor!) If you work in derivatives, risk, development, trading, etc. you'd better know what you are doing, there's now a big responsibility on your shoulders. In this second edition of Frequently Asked Questions in Quantitative Finance I continue in my mission to pull quant finance up from the dumbed-down depths, and to drag it back down to earth from the super-sophisticated stratosphere. Readers of my work and blogs will know that I think both extremes are dangerous. Quant finance should inhabit the middle ground, the mathematics sweet spot, where the models are robust and understandable, and easy to mend. ...And that's what this book is about. This book contains important FAQs and answers that cover both theory and practice. There are sections on how to derive Black-Scholes (a dozen different ways!), the popular models, equations, formulae and probability distributions, critical essays, brainteasers, and the commonest quant mistakes. The quant mistakes section alone is worth trillions of dollars! I hope you enjoy this book, and that it shows you how interesting this important subject can be. And I hope you'll join me and others in this industry on the discussion forum on wilmott.com. See you there!" FAQQF2...including key models, important formulae, popular contracts, essays and opinions, a history of quantitative finance, sundry lists, the commonest mistakes in quant finance, brainteasers, plenty of straight-talking, the Modellers' Manifesto and lots more.

The Best of Wilmott 1-Paul Wilmott 2005-07-08 November 11th 2003 saw a landmark event take place in London. As the first conference designed for quants by quants the Quantitative Finance Review 2003, moved away from the anonymous bazaars that have become the norm, and instead delivered valuable information to market practitioners with the greatest interest. The roster of speakers was phenomenal, ranging from founding fathers to bright young things, discussing the latest developments, with a specific emphasis on the burgeoning field of credit derivatives. You really had to be there. Until now, at least. The Best of Wilmott 1: Including the latest research from Quantitative Finance Review 2003 contains these first-class articles, originally presented at the QFR 2003, along with a collection of selected technical papers from Wilmott magazine. In publishing this book we hope to share some of the great insights that, until now, only delegates at QFR 2003 were privy to, and give you some idea why Wilmott magazine is the most talked about periodical in the market. Including articles from luminaries such as Ed Thorp, Jean-Philippe Bouchaud, Philipp Schoenbucher, Pat Hagan, Ephraim Clark, Marc Potters, Peter Jaeckel and Paul Wilmott, this collection is a must for anyone working in the field of quantitative finance. The articles cover a wide range of topics: * Psychology in Financial Markets * Measuring Country Risk as Implied Volatility * The Equity-to-Credit Problem * Introducing Variety in Risk Management * The Art and Science of Curve Building * Next Generation Models for Convertible Bonds with Credit Risk * Stochastic Volatility and Mean-variance Analysis * Cliquet Options and Volatility Models And as they say at the end of (most) Bond movies The Best of Wilmott... will return on an annual basis.

The Best of Wilmott 2-Paul Wilmott 2006-02-22 The Team at Wilmott is very proud to present this compilation of Wilmott magazine articles and presentations from our second year. We have selected some of the very best in cutting-edge research, and the most illuminating of our regular columns. The technical papers include state-of-the-art pricing tools and models. You'll notice there's a bias towards volatility modelling in the book. Of course, it's one of my favourite topics, but volatility is also the big unknown as far as pricing and hedging is concerned. We present research in this area from some of the best newcomers in this field. You'll see ideas that make a mockery of 'received wisdom,' ideas that are truly paradigm shattering - for we aren't content with a mere 'shift.' We know you'll enjoy it! The Best of Wilmott will return again next year...

Listed Volatility and Variance Derivatives-Yves Hilpisch 2016-11-10 Leverage Python for expert-level volatility and variance derivative trading Listed Volatility and Variance Derivatives is a comprehensive treatment of all aspects of these increasingly popular derivatives products, and has the distinction of being both the first to cover European volatility and variance products provided by Eurex and the first to offer Python code for implementing comprehensive quantitative analyses of these financial products. For those who want to get started right away, the book is accompanied by a dedicated Web page and a Github repository that includes all the code from the book for easy replication and use, as well as a hosted version of all the code for immediate execution. Python is fast making inroads into financial modelling and derivatives analytics, and recent developments allow Python to be as fast as pure C++ or C while consisting generally of only 10% of the code lines associated with the compiled languages. This complete guide offers rare insight into the use of Python to undertake complex quantitative analyses of listed volatility and variance derivatives. Learn how to use Python for data and financial analysis, and reproduce stylised facts on volatility and variance markets Gain an understanding of the fundamental techniques of modelling volatility and variance and the model-free replication of variance Familiarise yourself with micro structure elements of the markets for listed volatility and variance derivatives Reproduce all results and graphics with IPython/Jupyter Notebooks and Python codes that accompany the book Listed Volatility and Variance Derivatives is the complete guide to Python-based quantitative analysis of these Eurex derivatives products.

Interest Rate Modelling in the Multi-Curve Framework-M. Henrard 2014-05-29 Following the financial crisis dramatic market changes, a new standard in interest rate modelling emerged, called the multi-curve framework. The author provides a detailed analysis of the framework, through its foundations, evolution and implementation. The book also covers recent extensions to collateral and stochastic spreads modelling.

My Life as a Quant-Emanuel Derman 2012-06-12 In My Life as a Quant, Emanuel Derman relives his exciting journey as one of the first high-energy particle physicists to migrate to Wall Street. Page by page, Derman details his adventures in this field—analyzing the incompatible personas of traders and quants, and discussing the dissimilar nature of knowledge in physics and finance. Throughout this tale, he also reflects on the appropriate way to apply the refined methods of physics to the hurly-burly world of markets.

Counterparty Credit Risk-Jon Gregory 2010-01-26 The first decade of the 21st Century has been disastrous for financial institutions, derivatives and risk management. Counterparty credit risk has become the key element of financial risk management, highlighted by the bankruptcy of the investment bank Lehman Brothers and failure of other high profile institutions such as Bear Sterns, AIG, Fannie Mae and Freddie Mac. The sudden realisation of extensive counterparty risks has severely compromised the health of global financial markets. Counterparty risk is now a key problem for all financial institutions. This book explains the emergence of counterparty risk during the recent credit crisis. The quantification of firm-wide credit exposure for trading desks and businesses is discussed alongside risk mitigation methods such as netting and collateral management (margining). Banks and other financial institutions have been recently developing their capabilities for pricing counterparty risk and these elements are considered in detail via a characterisation of credit value adjustment (CVA). The implications of an institution valuing their own default via debt value adjustment (DVA) are also considered at length. Hedging aspects, together with the associated instruments such as credit defaults swaps (CDSs) and contingent CDS (CCDS) are described in full. A key feature of the credit crisis has been the realisation of wrong-way risks illustrated by the failure of monoline insurance companies. Wrong-way counterparty risks are addressed in detail in relation to interest rate, foreign exchange, commodity and, in particular, credit derivative products. Portfolio counterparty risk is covered, together with the regulatory aspects as defined by the Basel II capital requirements. The management of counterparty risk within an institution is also discussed in detail. Finally, the design and benefits of central clearing, a recent development to attempt to control the rapid growth of counterparty risk, is considered. This book is unique in being practically focused but also covering the more technical aspects. It is an invaluable complete reference guide for any market practitioner with any responsibility or interest within the area of counterparty credit risk.

Dynamic Hedging-Nassim Nicholas Taleb 1997-01-14 Destined to become a market classic, Dynamic Hedging is the only practical reference in exotic options hedgingand arbitrage for professional traders and money managers Watch the professionals. From central banks to brokerages to multinationals, institutional investors are flocking to a new generation of exotic and complex options contracts and derivatives. But the promise of ever larger profits also creates the potential for catastrophic trading losses. Now more than ever, the key to trading derivatives lies in implementing preventive risk management techniques that plan for and avoid these appalling downturns. Unlike other books that offer risk management for corporate treasurers, Dynamic Hedging targets the real-world needs of professional traders and money managers. Written by a leading options trader and derivatives risk advisor to global banks and exchanges, this book provides a practical, real-world methodology for monitoring and managing all the risks associated with portfolio management. Nassim Nicholas Taleb is the founder of Empirica Capital LLC, a hedge fund operator, and a fellow at the Courant Institute of Mathematical Sciences of New York University. He has held a variety of senior derivative trading positions in New York and London and worked as an independent floor trader in Chicago. Dr. Taleb was inducted in February 2001 in the Derivatives Strategy Hall of Fame. He received an MBA from the Wharton School and a Ph.D. from University Paris-Dauphine.

C++ Design Patterns and Derivatives Pricing-Mark S. Joshi 2004-08-05 Shows how to combine mathematical finance and object-oriented programming to practical effect.

Artificial Intelligence in Finance-Yves Hilpisch 2020-10-14 The widespread adoption of AI and machine learning is revolutionizing many industries today. Once these technologies are combined with the programmatic availability of historical and real-time financial data, the financial industry will also change fundamentally. With this practical book, you'll learn how to use AI and machine learning to discover statistical inefficiencies in financial markets and exploit them through algorithmic trading. Author Yves Hilpisch shows practitioners, students, and academics in both finance and data science practical ways to apply machine learning and deep learning algorithms to finance. Thanks to lots of self-contained Python examples, you'll be able to replicate all results and figures presented in the book. In five parts, this guide helps you: Learn central notions and algorithms from AI, including recent breakthroughs on the way to artificial general intelligence (AGI) and superintelligence (SI) Understand why data-driven finance, AI, and machine learning will have a lasting impact on financial theory and practice Apply neural networks and reinforcement learning to discover statistical inefficiencies in financial markets Identify and exploit economic inefficiencies through backtesting and algorithmic trading--the automated execution of trading strategies Understand how AI will influence the competitive dynamics in the financial industry and what the potential emergence of a financial singularity might bring about

Credit Derivatives Pricing Models-Philipp J. Schönbucher 2003-10-31 The credit derivatives market is booming and, for the first time, expanding into the banking sector which previously has had very little exposure to quantitative modeling. This phenomenon has forced a large number of professionals to confront this issue for the first time. Credit Derivatives Pricing Models provides an extremely comprehensive overview of the most current areas in credit risk modeling as applied to the pricing of credit derivatives. As one of the first books to uniquely focus on pricing, this title is also an excellent complement to other books on the application of credit derivatives. Based on proven techniques that have been tested time and again, this comprehensive resource provides readers with the knowledge and guidance to effectively use credit derivatives pricing models. Filled with relevant examples that are applied to real-world pricing problems, Credit Derivatives Pricing Models paves a clear path for a better understanding of this complex issue. Dr. Philipp J. Schönbucher is a professor at the Swiss Federal Institute of Technology (ETH), Zurich, and has degrees in mathematics from Oxford University and a PhD in economics from Bonn University. He has taught various training courses organized by ICM and CIFT, and lectured at risk conferences for practitioners on credit derivatives pricing, credit risk modeling, and implementation.

Machine Learning and Data Science Blueprints for Finance-Hariom Tatsat 2020-10-01 Over the next few decades, machine learning and data science will transform the finance industry. With this practical book, analysts, traders, researchers, and developers will learn how to build machine learning algorithms crucial to the industry. You'll examine ML concepts and over 20 case studies in supervised, unsupervised, and reinforcement learning, along with natural language processing (NLP). Ideal for professionals working at hedge funds, investment and retail banks, and fintech firms, this book also delves deep into portfolio management, algorithmic trading, derivative pricing, fraud detection, asset price prediction, sentiment analysis, and chatbot development. You'll explore real-life problems faced by practitioners and learn scientifically sound solutions supported by code and examples. This book covers: Supervised learning regression-based models for trading strategies, derivative pricing, and portfolio management Supervised learning classification-based models for credit default risk prediction, fraud detection, and trading strategies Dimensionality reduction techniques with case studies in portfolio management, trading strategy, and yield curve construction Algorithms and clustering techniques for finding similar objects, with case studies in trading strategies and portfolio management Reinforcement learning models and techniques used for building trading strategies, derivatives hedging, and portfolio management NLP techniques using Python libraries such as NLTK and scikit-learn for transforming text into meaningful representations

Handbook Of Global Financial Markets: Transformations, Dependence, And Risk Spillovers-Boubaker Sabri 2019-06-27 The objective of this handbook is to provide the readers with insights about current dynamics and future potential transformations of global financial markets. We intend to focus on four main areas: Dynamics of Financial Markets; Financial Uncertainty and Volatility; Market Linkages and Spillover Effects; and Extreme Events and Financial Transformations and address the following critical issues, but not limited to: market integration and its implications; crisis risk assessment and contagion effects; financial uncertainty and volatility; role of emerging financial markets in the global economy; role of complex dynamics of economic and financial systems; market linkages, asset valuation and risk management; exchange rate volatility and firm-level exposure; financial effects of economic, political and social risks; link between financial development and economic growth; country risks; and sovereign debt markets.

Extreme Money-Satyajit Das 2011-08-04 The human race created money and finance: then, our inventions recreated us. In Extreme Money, best-selling author and global finance expert Satyajit Das tells how this happened and what it means. Das reveals the spectacular, dangerous money games that are generating increasingly massive bubbles of fake growth, prosperity, and wealth--while endangering the jobs, possessions, and futures of virtually everyone outside finance. "...virtually in a category of its own — part history, part book of financial quotations, part cautionary tale, part textbook. It contains some of the clearest charts about risk transfer you will find anywhere. ...Others have laid out the dire consequences of financialisation ("the conversion of everything into monetary form", in Das's phrase), but few have done it with a wider or more entertaining range of references...[Extreme Money] does... reach an important, if worrying, conclusion: financialisation may be too deep-rooted to be torn out. As Das puts it — characteristically borrowing a line from a movie, Inception — "the hardest virus to kill is an idea". -Andrew Hill "Eclectic Guide to the Excesses of the Crisis" Financial Times (August 17, 2011) Extreme Money named to the longlist for the 2011 FT and Goldman Sachs Business Book of the Year award.

Risk and Asset Allocation-Attilio Meucci 2009-05-22 This encyclopedic, detailed resource covers all the steps of one-period allocation from the foundations to the most advanced developments. It includes a large number of figures and examples as well as real trading and asset management case studies.

Quantitative Financial Risk Management-Desheng Dash Wu 2011-06-25 The bulk of this volume deals with the four main aspects of risk management: market risk, credit risk, risk management - in macro-economy as well as within companies. It presents a number of approaches and case studies directed at applying risk management to diverse business environments. Included are traditional market and credit risk management models such as the Black-Scholes Option Pricing Model, the Vasicek Model, Factor models, CAPM models, GARCH models, KMV models and credit scoring models.

Bayesian Inference and Maximum Entropy Methods in Science and Engineering-Adriano Polpo 2018-07-12 These proceedings from the 37th International Workshop on Bayesian Inference and Maximum Entropy Methods in Science and Engineering (MaxEnt 2017), held in São Carlos, Brazil, aim to expand the available research on Bayesian methods and promote their application in the scientific community. They gather research from scholars in many different fields who use inductive statistics methods and focus on the foundations of the Bayesian paradigm, their comparison to objectivistic or frequentist statistics counterparts, and their appropriate applications. Interest in the foundations of inductive statistics has been growing with the increasing availability of Bayesian methodological alternatives, and scientists now face much more difficult choices in finding the optimal methods to apply to their problems. By carefully examining and discussing the relevant foundations, the scientific community can avoid applying Bayesian methods on a merely ad hoc basis. For over 35 years, the MaxEnt workshops have explored the use of Bayesian and Maximum Entropy methods in scientific and engineering application contexts. The workshops welcome contributions on all aspects of probabilistic inference,

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including novel techniques and applications, and work that sheds new light on the foundations of inference. Areas of application in these workshops include astronomy and astrophysics, chemistry, communications theory, cosmology, climate studies, earth science, fluid mechanics, genetics, geophysics, machine learning, materials science, medical imaging, nanoscience, source separation, thermodynamics (equilibrium and non-equilibrium), particle physics, plasma physics, quantum mechanics, robotics, and the social sciences. Bayesian computational techniques such as Markov chain Monte Carlo sampling are also regular topics, as are approximate inferential methods. Foundational issues involving probability theory and information theory, as well as novel applications of inference to illuminate the foundations of physical theories, are also of keen interest.

Understanding Credit Derivatives and Related Instruments-Antúlio Neves Bomfim 2005 Comprehensive introduction to the main isues in the credit derivatives market, including an accessible introduction to valuation methods.

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.

The XVA Challenge-Jon Gregory 2015-09-15 A detailed, expert–driven guide to today′s major financial point of interest The xVA Challenge: Counterparty Credit Risk, Funding, Collateral, and Capital is a practical guide from one of the leading and most influential credit practitioners, Jon Gregory. Focusing on practical methods, this informative guide includes discussion around the latest regulatory requirements, market practice, and academic thinking. Beginning with a look at the emergence of counterparty risk during the recent global financial crisis, the discussion delves into the quantification of firm–wide credit exposure and risk mitigation methods, such as netting and collateral. It also discusses thoroughly the xVA terms, notably CVA, DVA, FVA, ColVA, and KVA and their interactions and overlaps. The discussion of other aspects such as wrong–way risks, hedging, stress testing, and xVA management within a financial institution are covered. The extensive coverage and detailed treatment of what has become an urgent topic makes this book an invaluable reference for any practitioner, policy maker, or student. Counterparty credit risk and related aspects such as funding, collateral, and capital have become key issues in recent years, now generally characterized by the term ′xVA′. This book provides practical, in–depth guidance toward all aspects of xVA management. Market practice around counterparty credit risk and credit and debit value adjustment (CVA and DVA) The latest regulatory developments including Basel III capital requirements, central clearing, and mandatory collateral requirements The impact of accounting requirements such as IFRS 13 Recent thinking on the applications of funding, collateral, and capital adjustments (FVA, ColVA and KVA) The sudden realization of extensive counterparty risks has severely compromised the health of global financial markets. It′s now a major point of action for all financial institutions, which have realized the growing importance of consistent treatment of collateral, funding, and capital alongside counterparty risk. The xVA Challenge: Counterparty Credit Risk, Funding, Collateral, and Capital provides expert perspective and real–world guidance for today′s institutions.

Paul Wilmott Introduces Quantitative Finance-Paul Wilmott 2013-10-18 Paul Wilmott Introduces Quantitative Finance, Second Edition is an accessible introduction to the classical side of quantitative finance specifically for university students. Adapted from the comprehensive, even epic, works Derivatives and Paul Wilmott on Quantitative Finance, Second Edition, it includes carefully selected chapters to give the student a thorough understanding of futures, options and numerical methods. Software is included to help visualize the most important ideas and to show how techniques are implemented in practice. There are comprehensive end-of-chapter exercises to test students on their understanding.

The Economist- 2007

Machine Learning-Paul Wilmott 2019-05-20 Machine Learning: An Applied Mathematics Introduction covers the essential mathematics behind all of the following topics - K Nearest Neighbours; K Means Clustering; Naïve Bayes Classifier; Regression Methods; Support Vector Machines; Self-Organizing Maps; Decision Trees; Neural Networks; Reinforcement Learning

Credit Derivatives-George Chacko 2006-06-02 The credit risk market is the fastest growing financial market in the world, attracting everyone from hedge funds to banks and insurance companies. Increasingly, professionals in corporate finance need to understand the workings of the credit risk market in order to successfully manage risk in their own organizations; in addition, some wish to move into the field on a full-time basis. Most books in the field, however, are either too academic for working professionals, or written for those who already possess extensive experience in the area. Credit Derivatives fills the gap, explaining the credit risk market clearly and simply, in language any working financial professional can understand. Harvard Business School faculty member George C. Chacko and his colleagues begin by explaining the underlying principles surrounding credit risk. Next, they systematically present today's leading methods and instruments for managing it. The authors introduce total return swaps, credit spread options, credit linked notes, and other instruments, demonstrating how each of them can be used to isolate risk and sell it to someone willing to accept it.

Business Risk and Simulation Modelling in Practice-Michael Rees 2015-08-03 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 the principles and concepts in simulation methods, the statistical measurement of risk, the use 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 appropriate depending on the context, whereas the core modelling concepts and risk assessment contexts are largely the same in each case. Some additional features and key benefits of using @RISK are also covered. Business Risk and Simulation Modelling in Practice reflects the author′s many years in training and consultancy in these areas. It provides clear and complete guidance, enhanced with an expert perspective. It uses approximately one hundred practical and real-life models to demonstrate all key concepts and techniques; these are accessible on the companion website.

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