Real Time Trading Models And The Statistical Properties Of

ALLEN CHAVEZ

GRIN Verlag
Technological innovations are altering the traditional value chain in securities trading. Hitherto the order handling, i.e. the appropriate implementation of a general trading decision into particular orders, has been a core competence of brokers. Labeled as Algorithmic Trading, the automation of this task recently found its way both into the brokers' portfolio of service offerings as well as to their customers' trading desks. The software performing the order handling thereby constantly monitors the market(s) in real-time and further evaluates historical data to dynamically determine appropriate points in time for trading. Within only a few years, this technology propagated itself among market participants along the entire value chain and has nowadays gained a significant market share on securities markets worldwide. Surprisingly, there has been only little research analyzing the impact of this special type of trading on markets. Markus Gsell's book aims at closing this gap by analyzing the drivers for adoption of this technology, the impact the application of this technology has on markets on a macro level, i.e. how the market outcome is affected, as well as on a micro level, i.e. how the exhibited trading behavior of these automated traders differs from normal traders' behavior.

How to Build Your Own Algorithmic Trading Business John Wiley & Sons
Risk management solutions for today's high-speed investing environment Real-Time Risk is the first book to show regular, institutional, and quantitative investors how to navigate intraday threats and stay on-course. The FinTech revolution has brought massive changes to the way investing is done. Trading happens in microsecond time frames, and while risks are emerging faster and in greater volume than ever before, traditional risk management approaches are too slow to be relevant. This book describes market microstructure and modern risks, and presents a new way of thinking about risk management in today's high-speed world. Accessible, straightforward explanations shed light on little-understood topics, and expert guidance helps investors protect themselves from new threats. The discussion dissects FinTech innovation to highlight the ongoing disruption, and to establish a toolkit of approaches for analyzing flash crashes, aggressive high frequency trading, and other specific aspects of the market. Today's investors face an environment in which computers and infrastructure merge, regulations allow dozens of exchanges to coexist, and globalized business facilitates round-the-clock deals. This book shows you how to navigate today's investing environment safely and profitably, with the latest in risk-management thinking. Discover risk management that works within micro-second trading Understand the nature and impact of real-time risk, and how to protect yourself Learn why flash crashes happen, and how to mitigate damage in advance Examine the FinTech disruption to established business models and practices When technology collided with investing, the boom created stratospheric amounts of data that allows us to plumb untapped depths and discover solutions that were unimaginable 20 years ago. Real-Time Risk describes these solutions, and provides practical guidance for today's savvy investor.

The Science of Algorithmic Trading and Portfolio Management MIT Press
This book contains revised versions of papers presented on scientific workshop “Modeling Multi-commodity Trade: Information exchange methods”, which took place in November 2010 atWarsaw University of Technology. It summarizes results of the research work supported so far by scientific grant “Methods and architectures of information interchange for electronic trade on infrastructural markets” (see page xi), and some earlier research work on multi-commodity markets modeling. Though partial results of the research were published earlier, the book gives the most complete view on results of our research in the field of modeling the trade on complex multi-commodity infrastructural markets.

Real-Time Trading Models and the Statistical Properties of Foreign Exchange Rates John Wiley & Sons
Temporal and spatiotemporal data form an inherent fabric of the society as we are faced with streams of data coming from numerous sensors, data feeds, recordings associated with numerous areas of application embracing physical and human-generated phenomena (environmental data, financial markets, Internet activities, etc.). A quest for a thorough analysis, interpretation, modeling and prediction of time series comes with an ongoing challenge for developing models that are both accurate and user-friendly (interpretable). The volume is aimed to exploit the conceptual and algorithmic framework of Computational Intelligence (CI) to form a cohesive and comprehensive environment for building models of time series. The contributions covered in the volume are fully reflective of the wealth of the CI technologies by bringing together ideas, algorithms, and numeric studies, which convincingly demonstrate their relevance, maturity and visible usefulness. It reflects upon the truly remarkable diversity of methodological and algorithmic approaches and case studies. This volume is aimed at a broad audience of researchers and practitioners engaged in various branches of operations research, management, social sciences, engineering, and economics. Owing to the nature of the material being covered and a way it has been arranged, it establishes a comprehensive and timely picture of the ongoing pursuits in the area and fosters further developments.

The Hedge Fund Edge John Wiley & Sons
Smart Grid: Networking, Data Management, and Business Models delivers a comprehensive overview of smart grid communications, discussing the latest advances in the technology, the related cyber security issues, and the best ways to manage user demand and pricing. Comprised of 16 chapters authored by world-renowned experts, this book: Considers the use of cognitive radio and software-defined networking in the smart grid Explores the space of attacks in the energy management process, the need for a smart grid simulator, and the management issues that arise around smart cities Describes a real-time pricing scheme that aims to reduce the peak-to-average load ratio Explains how to realize low-carbon economies and the green smart grid through the pervasive management of demand Presents cutting-edge research on microgrids, electric vehicles, and energy trading in the smart grid Thus, Smart Grid: Networking, Data Management, and Business Models provides a valuable reference for utility operators, telecom operators, communications engineers, power engineers, electric vehicle original equipment manufacturers (OEMs), electric vehicle service providers, university professors, researchers, and students.

Hybrid Artificial Intelligent Systems Academic Press
High frequency trading has swept Wall Street in the past year, creating stunning profits for top tier banks and specialized trading firms. Given the success, many hedge funds and other types of trading firms are implementing or expanding high frequency strategies. As competition increases, existing strategies will become less profitable and new high-frequency strategies will be developed. In High Frequency Trading Models + Website, Dr. Gewei Ye describes the technology, architecture, and algorithms underlying current high frequency trading models, such as rebate trading, arbitrage, flash trading, and other types of trading, which exploit order flow imbalances and temporary pricing inefficiencies. He explains how to develop a HFT trading system and introduces his own system for building high frequency strategies based on behavioral algorithms. Finally, he discusses how to improve current institutional HFT strategies and suggests directions for new strategies.

Smart Grid Yeswici LLC
This publication features quantitative statistical research models that were privately developed for 'Real-Time Trading Analyses' to determine volatility, trends and trading opportunities within the $6.6 trillion a day global FX currency market.

High Frequency Trading Models, + Website World Scientific
This book covers the techniques of data mining, knowledge discovery, genetic algorithms, neural networks, bootstrapping, machine learning, and Monte Carlo simulation. Computational finance, an

exciting new cross-disciplinary research area, draws extensively on the tools and techniques of computer science, statistics, information systems, and financial economics. This book covers the techniques of data mining, knowledge discovery, genetic algorithms, neural networks, bootstrapping, machine learning, and Monte Carlo simulation. These methods are applied to a wide range of problems in finance, including risk management, asset allocation, style analysis, dynamic trading and hedging, forecasting, and option pricing. The book is based on the sixth annual international conference Computational Finance 1999, held at New York University's Stern School of Business.

Multi-Asset Risk Modeling Academic Press

A fully revised second edition of the best guide to high-frequency trading High-frequency trading is a difficult, but profitable, endeavor that can generate stable profits in various market conditions. But solid footing in both the theory and practice of this discipline are essential to success. Whether you're an institutional investor seeking a better understanding of high-frequency operations or an individual investor looking for a new way to trade, this book has what you need to make the most of your time in today's dynamic markets. Building on the success of the original edition, the Second Edition of High-Frequency Trading incorporates the latest research and questions that have come to light since the publication of the first edition. It skillfully covers everything from new portfolio management techniques for high-frequency trading and the latest technological developments enabling HFT to updated risk management strategies and how to safeguard information and order flow in both dark and light markets. Includes numerous quantitative trading strategies and tools for building a high-frequency trading system Address the most essential aspects of high-frequency trading, from formulation of ideas to performance evaluation The book also includes a companion Website where selected sample trading strategies can be downloaded and tested Written by respected industry expert Irene Aldridge While interest in high-frequency trading continues to grow, little has been published to help investors understand and implement this approach—until now. This book has everything you need to gain a firm grip on how high-frequency trading works and what it takes to apply it to your everyday trading endeavors.

Quantitative Analysis, Derivatives Modeling, and Trading Strategies UniCAD

MATLAB Trading Toolbox provides functions for analyzing transaction costs, accessing trade and quote pricing data, defining order types, and sending orders to financial trading markets. The toolbox lets you integrate streaming and event-based data into MATLAB, enabling you to develop financial trading strategies and algorithms that analyze and react to the market in real time. You can build algorithmic or automated trading strategies that work across multiple asset classes, instrument types, and trading markets while integrating with industry-standard or proprietary trade execution platforms. With Trading Toolbox you can analyze and estimate transaction costs before placing an order, as well as attribute costs post-trade. You can analyze transaction costs associated with market impact, timing, liquidity, and price appreciation, and use cost curves to minimize transaction costs for single assets or for a portfolio of assets. Trading Toolbox lets you access real-time streams of tradable instrument data, including quotes, volumes, trades, market depth, and instrument metadata. You can define order types and specify order routing and filling procedures. The essential content of this book is the following: -Market impact modeling and cost curve generation using Kissell Research Group models -Trading cost, sensitivity, and post-trade execution analysis -Access to current, intraday, event-based, and real-time tradable instrument data -Data filtering by instrument and exchange -Definable order types and execution instructions -Access to FIX-compliant trading systems using FIX Flyer Engine -Support for Bloomberg EMSX, Trading Technologies X_TRADER, CQG Integrated Client, and Interactive Brokers TWS

How to Build Your Own Algorithmic Trading Business John Wiley & Sons

Advanced Option Pricing Models details specific conditions under which current option pricing models fail to provide accurate price estimates and then shows option traders how to construct improved models for better pricing in a wider range of market conditions. Model-building steps cover options pricing under conditional or marginal distributions, using polynomial approximations and “curve fitting,” and compensating for mean reversion. The authors also develop effective prototype models that can be put to immediate use, with real-time examples of the models in action.

Time Series Analysis, Modeling and Applications McGraw Hill Professional

Many traders would like to have the opportunity of looking over the shoulders of the professionals as they trade. Now, for the first time, Thomas Vittner, in his trading manual, offers you the possibility of being there »live« during his trading sessions. To this end, he painstakingly recorded his day-to-day trading over the course of a number of weeks. How does this top trader prepare himself for the current trading day? How does he react to quarterly results and to important decisions, such as those of the central banks? With reference to his trades, Vittner demonstrates the role of classic trading instruments such as stops, ratios and indicators and compares different strategies objectively on the basis of their results. Not only does the author enable you to take a look through the keyhole but he also provides practical tips, explains the theory behind his transactions and shows what and how you, as a trader, can learn from failures. Furthermore, you'll learn whether or not a good strategy really does work in all markets or which ratios traders pay attention to. Moreover, it's just as important for you to know about how position sizing or stock selection affect a trading system, the significance of the compounding effect, or how brokerage fees that are too high can lead a trader to ruin. Together with Thomas Vittner, learn how the markets work. In this way, you'll see your trading from a completely new point of view, in future. The motto is knowledge instead of belief because those who know nothing have to believe everything. Experience close up and at first hand what stock market trading is really about. A book that truly shows trading in practice.

Optimal Portfolio Modeling John Wiley & Sons

The Internet/WWW has made it possible to easily access quantities of information never available before. However, both the amount of information and the variation in quality pose obstacles to the efficient use of the medium. Artificial intelligence techniques can be useful tools in this context. Intelligent systems can be applied to searching the Internet and data-mining, interpreting Internet-derived material, the humanOCoWeb interface, remote condition monitoring and many other areas. This volume presents the latest research on the interaction between intelligent systems (neural networks, adaptive and connectionist paradigms, fuzzy and rule-based systems, intelligent agents) and the Internet/WWW. It surveys both the employment of intelligent systems to facilitate and enhance the use of the Internet, and applications where the Internet is a channel through which intelligent techniques are applied. Contents: A Review of Search and Resource Discovery Techniques in Peer-to-Peer Networks (S Botros & S Waterhouse); Adaptive Content Mapping for Internet Navigation (R W Brause & M Ueberall); Flexible Queries to XML Information (E Damiani et al.); Agent-Based Hypermedia Models (W Balzano et al.); Self-Organizing Neural Networks Application for Information Organization (R Rizzo); Emotion-Orientated Intelligent Systems (T Ichimura et al.); Public Opinion Channel: A Network-Based Interactive Broadcasting System for Supporting a Knowledge-Creating Community (T Fukuhara et al.); A New Era of Intelligent E-Commerce Based on Intelligent Java Agent-Based Development Environment (iJADE) (R S T Lee); Automated Internet Trading Based on Optimized Physics Models of Markets (L Ingber & R P Mondescu); Implementing and Maintaining a Web Case-Based Reasoning System for Heating Ventilation and Air Conditioning Systems Sales Support (I Watson). Readership: Engineers, researchers, students and technical managers interested in Internet-based intelligent systems."

New Market Timing Techniques World Scientific

The concept of Algorithmic Trading emulates via electronic means a broker s core competency of slicing a big order into a multiplicity of smaller orders and of timing these orders to minimize market impact. Based on mathematical models and considering historical and real-time market data, algorithms determine ex ante or continuously the optimum size of the (next) slice and its time of submission to the market. Algorithmic trading models are gaining market share worldwide. As this might impact the order flow on the markets it is self-evident to investigate whether algorithmic trading can be categorized in the traditional way or whether it represents a new category of stylized trader. The paper assesses the upcoming sophisticated trading strategy of algorithmic trading against the background of the traditional categories of stylized traders in the literature, i.e. informed traders, momentum traders and noise traders. As a conclusion, in order to assess the of impact algorithmic trading on financial markets, the set-up of a new simulation model incorporating agents representing the specific properties and the trading behavior of algorithmic trading is proposed.

Handbook on Information Technology in Finance epubli

Electronic and algorithmic trading has become part of a mainstream response to buy-side traders’ need to move large blocks of shares with minimum market impact in today’s complex institutional trading environment. This book illustrates an overview of key providers in the marketplace. With electronic trading platforms becoming increasingly sophisticated, more cost effective measures handling larger order flow is becoming a reality. The higher reliance on electronic trading has had profound implications for vendors and users of information and trading products. Broker dealers providing solutions through their products are facing changes in their business models such as: relationships with sellside customers, relationships with buyside customers, the importance of broker neutrality, the role of direct market access, and the relationship with prime brokers. Electronic and Algorithmic Trading Technology: The Complete Guide is the ultimate guide to managers, institutional investors, broker dealers, and software vendors to better understand innovative technologies that can cut transaction costs, eliminate human error, boost trading efficiency and supplement productivity. As economic and regulatory pressures are driving financial institutions to seek efficiency gains by improving the quality of software systems, firms are devoting increasing amounts of financial and human capital to maintaining their competitive edge. This book is written to aid the management and development of IT systems for financial institutions. Although the book focuses on the securities industry, its solution framework can be applied to satisfy complex automation requirements within very different sectors of financial services – from payments and cash management, to insurance and securities. Electronic and Algorithmic Trading: The Complete Guide is geared toward all levels of technology, investment management and the financial service professionals responsible for developing and implementing cutting-edge technology. It outlines a complete framework for successfully building a software system that provides the functionalities required by the business model. It is revolutionary as the first guide to cover everything from the technologies to how to evaluate tools to best practices for IT management. First book to address the hot topic of how systems can be designed to maximize the benefits of program and algorithmic trading Outlines a complete framework for developing a software system that meets the needs of the firm's business model Provides a robust system for making the build vs. buy decision based on business requirements

Theory and Practice John Wiley & Sons

While institutional traders continue to implement quantitative (or algorithmic) trading, many independent traders have wondered if they can still challenge powerful industry professionals at their own game? The answer is "yes," and in Quantitative Trading, Dr. Ernest Chan, a respected independent trader and consultant, will show you how. Whether you're an independent "retail" trader looking to start your own quantitative trading business or an individual who aspires to work as a quantitative trader at a major financial institution, this practical guide contains the information you need to succeed.

Statistical Models and Methods for Financial Markets John Wiley & Sons

Master the lucrative discipline of quantitative trading with this insightful handbook from a master in the field In the newly revised Second Edition of Quantitative Trading: How to Build Your Own Algorithmic Trading Business, quant trading expert Dr. Ernest P. Chan shows you how to apply both time-tested and novel quantitative trading strategies to develop or improve your own trading firm. You'll discover new case studies and updated information on the application of cutting-edge machine learning investment techniques, as well as: Updated back tests on a variety of trading strategies, with included Python and R code examples A new technique on optimizing parameters with changing market regimes using machine learning. A guide to selecting the best traders and advisors to manage your money Perfect for independent retail traders seeking to start their own quantitative trading business, or investors looking to invest in such traders, this new edition of Quantitative Trading will also earn a place in the libraries of individual investors interested in exploring a career at a major financial institution.

A Paradigm Shift Unicad

This book addresses selected practical applications and recent developments in the areas of quantitative financial modeling in derivatives instruments, some of which are from the authors' own research and practice. It is written from the viewpoint of financial engineers or practitioners, and, as such, it puts more emphasis on the practical applications of financial mathematics in the real market than the mathematics itself with precise (and tedious) technical conditions. It attempts to combine economic insights with mathematics and modeling so as to help the reader to develop intuitions. Among the modeling and the numerical techniques presented are the practical applications of the martingale theories, such as martingale model factory and martingale resampling and interpolation. In addition, the book addresses the counterparty credit risk modeling, pricing, and arbitraging strategies from the perspective of a front office functionality and a revenue center (rather than merely a risk management functionality), which are relatively recent developments and are of increasing importance. It also discusses various trading structuring strategies and touches upon some popular credit/IR/FX hybrid products, such as PRDC, TARN, Snowballs, Snowbears, CCDS, and credit extinguishers. While the primary scope of this book is the fixed-income market (with further focus on the interest rate market), many of the methodologies presented also apply to other financial markets, such as the credit, equity, foreign exchange, and commodity markets. Contents:Theory and Applications of Derivatives Modeling:Introduction to Counterparty Credit RiskMartingale Arbitrage Pricing in Real MarketThe Black–Scholes Framework and ExtensionsMartingale Resampling and InterpolationIntroduction to Interest Rate Term Structure ModelingThe Health–Jarrow–Morton FrameworkThe Interest Rate Market ModelCredit Risk Modeling and PricingInterest Rate Market Fundamentals and Proprietary Trading Strategies:Simple Interest Rate ProductsYield Curve ModelingTwo-Factor Risk ModelThe Holy Grail — Two-Factor Interest Rate ArbitrageYield Decomposition ModelInflation Linked Instruments ModelingInterest Rate Proprietary Trading Strategies Readership: Advanced readers who work or are interested in the fixed-income market. Keywords:CVA;Credit Valuation Adjustment;Counterparty Credit;BGM Model;HJM Model;RS Model;Martingale;Derivatives Modeling;Martingale Resampling;Orthogonal Exponential Spline;Stat

Arb;Nonexploding Bushy Tree;NBT;PRDC;TARN;Snowball;Snowbear;CCDS;Credit ExtinguisherReviews: “This state of the art text emphasizes various contemporary topics in fixed income derivatives from a practitioner's perspective. The combination of martingale technology with the author's expert practical knowledge contributes hugely to the book's success. For those who desire timely reporting straight from the trenches, this book is a must.” Peter Carr, PhD Director of the Masters in Math Finance Program Courant Institute, NYU “It is quite obvious that the authors have significant practical experience in sophisticated quantitative analysis and derivatives modeling. This real world focus has resulted in a text that not only provides clear presentations on modeling, pricing and hedging derivatives products, but also provides more advanced material that is usually found only in research publications. This book has innovative ideas, state of the art applications, and contains a wealth of valuable information that will interest academics, applied quantitative derivatives modelers, and traders.” Peter Ritchken Kenneth Walter Haber Professor Department of Banking and Finance, Weatherhead School of Management, Case Western Reserve University “Written by two experienced production Quants, this book contains a wealth of practical methods and useful insights that have been tried and tested. In addressing new tasks, most Quants worry about best practice. Along with specialist published papers, etc, this book is a must to help calibrate judgment. Presently one of the dozen select math-finance books that really should be on one's shelf!” Alan Brace University of Technology Sydney School of Finance and Economics Key Features:Covers various advanced interest rate models, such as the HJM framework, Markovian HJM models (multi-factor RS model in particular), and BGM models, as well as counterparty credit pricing models. It also touches upon some credit models, such as the Copula model, the factor model, and risky market model for credit spreadAddresses various practical applications of modeling, such as martingale arbitrage modeling under real market situations (such as using the correct risk-free interest rate, revised put-call parity, defaultable derivatives, and hedging in the presence of the volatility skew and smile, as well as brief discussions on secondary model calibration for handling the un-hedgeable variables, models for pricing and models for hedging)Presents practical numerical algorithms for the model implementation, such as martingale interpolation and resampling for enforcing discrete martingale relationships in situ in numerical procedures, modeling of the volatility skew, and a nonexploding bushy tree (NBT) technique for efficiently solving non-Markovian models, such as the multi-factor BGM market model, under the backward induction frameworkIntroduces the basics of the interest rate market, including various yield curve modeling, such as the well known Orthogonal Exponential Spline (OES) model, as well as proprietary trading strategies, stat arb in particular

What Investors Should Know About FinTech, High-Frequency Trading, and Flash Crashes John Wiley & Sons

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This volume constitutes the refereed proceedings of the 12th International Conference on Hybrid Artificial Intelligent Systems, HAIS 2017, held in La Rioja, Spain, in June 2017. The 60 full papers published in this volume were carefully reviewed and selected from 130 submissions. They are organized in the following topical sections: data mining, knowledge discovery and big data; bioinspired models and evolutionary computing; learning algorithms; visual analysis and advanced data processing techniques; data mining applications; and hybrid intelligent applications.

What Investors Should Know About FinTech, High-Frequency Trading, and Flash Crashes John Wiley & Sons

Research paper from the year 2012 in the subject Mathematics - Applied Mathematics, grade: 5.5, ZHAW Zürcher Hochschule für Angewandte Wissenschaften, language: English, abstract: As a consequence of the recent financial crisis, institutions are increasingly interested in identifying turning points in financial time series. The accurate and early identification of these turning points can result in the optimal exploitation of the invested capital and profit maximization. Most existing methods for the real-time identification of turning points have proved unreliable and therefore the need to develop a cutting-edge model. The DFA methodology of Prof. Dr. Marc Wildi is one promising real-time procedure that seeks to solve this problem. The purpose of this thesis is the evaluation and comparison of different variants of the DFA procedure in order to find a method for the effective identification of turning points in important financial time series, such as the S\&P 500 and the EUROSTOXX 50 and their implied volatility indices (VIX and VSTOXX, resp.). Further, this thesis aims to develop a suitable investment strategy based on the obtained results. For the purpose of this thesis, the time series mentioned above were analyzed between the years 1990 and 2011, using the last year as out-of-sample data. Frequential analysis using Fourier transforms as well as different variants of the DFA-algorithm were applied in order to identify the desired turning points. The results obtained from these analyses of the S\&P 500 and EUROSTOXX 50 time series show a considerable out-of-sample investment return which verifies the validity of the model. On a second level of analysis, using the implied volatility indices it was possible to generalize the model and thereby verify the initial results. Moreover, with the help of the development of further investment strategies it was possible to normalize profit returns, maintaining a semi-constant growth, which is usually preferred by financial institutions. Finally, given the structural similarities of the two main financial series examined, whose clear profile was only observable using the DFA system, it was possible to combine both time series using the daily exchange rate as a cyclical and structural catalyst, thus achieving a deeper thrust of the model. This all was possible by highlighting the flexibility of the DFA model for real-time analysis of financial time series and its practical application as a tool for investment analysis. Therefore, the DFA Modell enables an accurate real-time identification of tuning points in financial series.