

# The Science of Algorithmic Trading and Portfolio Management

By Robert Kissell





**The Science of Algorithmic Trading and Portfolio Management** By Robert Kissell

*The Science of Algorithmic Trading and Portfolio Management*, with its emphasis on algorithmic trading processes and current trading models, sits apart from others of its kind. Robert Kissell, the first author to discuss algorithmic trading across the various asset classes, provides key insights into ways to develop, test, and build trading algorithms. Readers learn how to evaluate market impact models and assess performance across algorithms, traders, and brokers, and acquire the knowledge to implement electronic trading systems.

This valuable book summarizes market structure, the formation of prices, and how different participants interact with one another, including bluffing, speculating, and gambling. Readers learn the underlying details and mathematics of customized trading algorithms, as well as advanced modeling techniques to improve profitability through algorithmic trading and appropriate risk management techniques. Portfolio management topics, including quant factors and black box models, are discussed, and an accompanying website includes examples, data sets supplementing exercises in the book, and large projects.

- Prepares readers to evaluate market impact models and assess performance across algorithms, traders, and brokers.
- Helps readers design systems to manage algorithmic risk and dark pool uncertainty.
- Summarizes an algorithmic decision making framework to ensure consistency between investment objectives and trading objectives.

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## The Science of Algorithmic Trading and Portfolio Management By Robert Kissell Bibliography

- Sales Rank: #742539 in eBooks
- Published on: 2013-10-01
- Released on: 2013-10-01
- Format: Kindle eBook

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### Editorial Review

#### Review

*"Kissell... introduces the mathematical models for constructing, calibrating, and testing market impact models that calculate the change in stock price caused by a large trade or order, and presents an advanced portfolio optimization process that incorporates market impact and transaction costs directly into portfolio optimization."--ProtoView.com, March 2014* *"This book provides excellent coverage of the challenges faced by portfolio managers and traders in implementing investment ideas and the advanced modeling techniques to address these challenges."--Kumar Venkataraman, Southern Methodist University*

#### From the Back Cover

Its emphasis on algorithmic trading processes and current trading models sets this book apart from others. As the first author to discuss algorithmic trading across the various asset classes, Robert Kissell provides key insights into ways to develop, test, and build trading algorithms. He summarizes market structure, the formation of prices, and how different participants interact with one another, including bluffing, speculating, and gambling. He shows readers the underlying details and mathematics required to develop, build, and test customized algorithms, providing them with advanced modeling techniques to improve profitability through algorithmic trading and appropriate risk management techniques. The accompanying website includes examples, data sets underlying exercises in the book, and large projects. Readers learn how to evaluate market impact models and assess performance across algorithms, traders, and brokers, as well as acquiring the ability to implement electronic trading systems.

#### About the Author

Dr. Robert Kissell is the president and founder of Kissell Research Group. He has over twenty years of experience specializing in economics, finance, math & statistics, risk, and sports modeling.

Dr. Kissell is author of the leading industry books, "The Science of Algorithmic Trading & Portfolio Management," (Elsevier, 2013), "Multi-Asset Risk Modeling" (Elsevier, 2014), and "Optimal Trading Strategies," (AMACOM, 2003). He has published numerous research papers on trading, electronic algorithms, risk management, and best execution. His paper, "Dynamic Pre-Trade Models: Beyond the Black Box," (2011) won Institutional Investor's prestigious paper of the year award.

Dr. Kissell is an adjunct faculty member of the Gabelli School of Business at Fordham University and is an associate editor of the Journal of Trading and the Journal of Index Investing. He has previously been an instructor at Cornell University in their graduate Financial Engineering program.

Dr. Kissell has worked with numerous Investment Banks throughout his career including UBS Securities where he was Executive Director of Execution Strategies and Portfolio Analysis, and at JPMorgan where he was Executive Director and Head of Quantitative Trading Strategies. He was previously at Citigroup/Smith Barney where he was Vice President of Quantitative Research, and at Instinet where he was Director of

Trading Research. He began his career as an Economic Consultant at R.J. Rudden Associates specializing in energy, pricing, risk, and optimization.

During his college years, Dr. Kissell was a member of the Stony Brook Soccer Team and was Co-Captain in his Junior and Senior years. It was during this time as a student athlete where he began applying math and statistics to sports modeling problems. Many of the techniques discussed in “Optimal Sports Math, Statistics, and Fantasy” were developed during his time at Stony Brook, and advanced thereafter. Thus, making this book the byproduct of decades of successful research.

Dr. Kissell has a Ph.D. in Economics from Fordham University, an MS in Applied Mathematics from Hofstra University, an MS in Business Management from Stony Brook University, and a BS in Applied Mathematics & Statistics from Stony Brook University.

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### **From reader reviews:**

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