

Dale W.R. Rosenthal

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Education

The University of Chicago. Chicago, IL

June 2008

Candidate for Ph.D. in Statistics

Dissertation: The Trade Signing Problem and Nearly-Gamma Random Variables

- Develops small-sample asymptotics for nearly-gamma-distributed random variables.
- Theory applies to market data delays; mean time to index deletion, loan default or prepayment
- Creates model to infer trade direction that beats standard methods by at least $N\%$.
- Empirical portion of analysis uses 250k? observations from previously unexplored dataset

Presentations

- Trade Signing and Nearly-Gamma Random Variables. December 2007
- Critique of *Liquidity Risk and Arbitrage Pricing Theory* by Çetin, Jarrow, and Protter (2004). March 2006
- *A Study of the Augmented System and Column-Splitting Approaches for Solving Two-Stage Stochastic Linear Programs by Interior-Point Methods* by Czyzyk, Fourer, and Mehrotra (1995). March 2006
- *A New Statistic for Influence in Linear Regression* by Peña (2005) May 2005

Projects

- Estimation of a multivariate time series (VARMA) model of intraday volume and volatility.
- Stochastic optimization of a rebalance alpha portfolio for various mean-CVaR objectives.

Teaching Assistantships

- Statistical Arbitrage: Advisor for and sole grader of final projects (simple alpha strategies).
- Experiment Analysis: Critiqued code, wrote exemplar to estimate random effects (PL, REML).
- High-frequency Data: Lectured half-time on market microstructure and electronic trading.

Cornell University. Ithaca, NY May 1995

B.S. Electrical Engineering

Coursework

- Univariate Time Series
- Linear Models
- Linear Optimization (LP)
- Stochastic Optimization (SP)
- Multivariate Time Series
- Mixed Effects Models
- Nonlinear Optimization (incl. SQP)
- Stochastic Dynamic Programming
- Longitudinal Data Analysis
- Generalized Linear Models
- Computational Statistics
- Bayesian Statistics

Experience

Self-employed. Chicago, IL

June 2004–August 2004

Infrastructure

- Wrote scripts to gather data (5-minute price snapshots, official close prices, dividends).
- Created security master to match among data sources.
- Computed market metrics: expected spreads, volumes, betas, and volatilities.
- Wrote scripts to calculate P&L for every 5 minutes during day.

Analysis

- Researched quantitative mean-reversion trade.
- Used market data and market metrics to calculate expected alpha.
- Applied belief function to alphas to find robust candidates.

Trading

- Invested \$22k of own capital (\$18k long, \$4k cash cushion) in 6×6 name long-short equity portfolio.
- Managed near-simultaneous trading on entry and exit to minimize skew and market impact.
- Hedged excess market risk with ETFs.
- Made 23% return: \$5k profit from \$22k investment; daily P&L volatility \approx \$300.

Morgan Stanley. New York, NY
Researcher/Trader, Equity Trading Lab
Proprietary Index Rebalance Trade

March 2000–September 2003

- Modeled expected alpha and traded index rebalance strategy.
- Determined how to hedge risk and maintained trade from entry to exit.
- Strategies made \approx \$40 MM annually.

Guaranteed Benchmark Trading

- Prototyped systematic trading of guaranteed VWAP/close deals (\$600 MM flow/day).
- Co-ran guarantee books to discover potential trading and risk issues.
- Extended theoretical framework to handle part-day trades.
- System made \approx \$10 MM annually.

Automated Customer Facilitation

- Automated facilitation of customer trades, based on guaranteed VWAP/close prototype.
- System made \approx 3 bp of net flow.

Market Impact Modeling

- Estimated multiple versions of US and European market impact models.
- Studied basic reformulations and more complex models to allow optimal order placement.
- Used large (2+ GB) datasets: 1.5MM US ticks, 4MM European ticks, and 250k real trades.

US OTC Market Center Analyses

- Analyzed ECN transactions to measure hidden liquidity, execution speed, and depth.
- Analyzed market maker transactions to measure speed, depth, and auto-execution probability.
- Results led to creating an adaptive intelligent order-routing system.

Performance Analysis Methodology

- Developed decomposition of execution performance into noise and skill components.
- Allowed analyzing changes in execution strategy and market microstructure with 75% less data.

Long-Term Capital Management. Greenwich, CT
Strategist, Equity Derivatives

June 1995–February 2000

Equity Basket Swap Structuring

- Co-wrote programs to create optimal equity baskets for index arb/hedging.
- Allowed synthetically shorting of stocks versus Japanese CBs and warrants.
- Index arb made \$10 MM annually; tracking error reduced by \$4 MM annually.

Equity Derivatives Risk

- Co-designed risk management technology infrastructure for equity derivatives.
- Oversaw portfolio valuation runs and produced reports of risk exposures and P&L.
- Wrote programs to automate valuation and risk reporting.

Equity Derivatives Strategy

- Assisted with execution on a model-driven Japanese warrant strategy.
- Implemented a basic model to value equity index futures.

Firmwide Infrastructure

- Created back-office system for tracking OTC options and equity-linked swaps.
- Designed and wrote system to queue trades for transmittal to firm's custodians.

Goldman Sachs. New York, NY
Intern Programmer/Analyst, Listed Equities

September 1993–August 1994

- Managed transition of real-time trade comparison project from outside consultant to our group.
- Created real-time application to book trades with live positions and basic query capabilities.

Other Skills

Professional Licensing: Series 7, 63, 55. (currently lapsed)
Stats/Math/OR Computation: R/S-PLUS, Matlab/Octave, SAS, AMPL, SCA
Computer Programming: C, Perl, SQL, C++, Tcl/Tk
Foreign Languages: German (intermediate), Polish (basic), French (basic)