Zach Guo

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WORK EXPERIENCE

The Options Clearing Corporation   Chicago, Illinois
Econometrician, Quantitative Risk Management   June 2013 - Present

- One of the main architects of the portfolio margin calculation system (STANS), stress testing system, and the clearing fund (guarantee fund) calculation system.
- Direct quantitative research and model development to support new product initiatives, including treasury securities, interest rate derivatives, VIX derivatives, variance futures, vanilla and exotic options, and energy derivatives.
- Worked in both C++/JAVA environments to implement and maintain the financial derivative pricing library, the Monte Carlo simulation system, and the option account margin system.
- Responsible for econometric methodology implementation in the Monte Carlo simulation system for pricing and risk management of derivative portfolios.
- Selected documents completed as the first author: Clearing Fund Methodology (25 pages); Stress Testing Methodology (18 pages); Modeling VIX Derivatives (20 pages); Modeling Interest Rate Derivatives (29 pages); Pricing Energy Derivatives (38 pages); Pricing Electricity Derivatives (30 pages); GARCH Models with Fat-tailed Distributions (21 pages).
- Other documents involved: Margins Methodology; Summary of Abnormal Activities of Options Exercise Practice; OCC's Business Backtesting Report; Risk Drivers Selection for Eurodollar Futures and Electricity Derivatives; Liquidity Risk for Options Portfolios.

Vanderbilt University   Nashville, Tennessee
Research Assistant, Department of Economics   Sep. 2009 – Apr. 2013
Selected Project: "Order Flow and Exchange Rate Dynamics in Continuous Time"

- Built a theoretical continuous-time model to explain the exchange rate disconnect puzzle.
- Developed a new econometric estimator and showed its better performance in fitting 5-minute Yen-to-Dollar FX rate data from May 1 – August 31, 1996.

Teaching Assistant, Department of Economics   Sep. 2008 – Apr. 2012

EDUCATION

Vanderbilt University   Nashville, Tennessee
Ph.D. in Econometrics   August 2013

- *Selected Courses*: Continuous-Time Finance, Asset Pricing, Corporate Finance I&II, Time Series Analysis, Micro-econometrics, Nonparametrics, Econometric Theory, Stochastic Calculus.

Peking University   Beijing, P.R.China
B.S. in Mathematics   Jul. 2007

SKILLS

Programming Languages: C++, Java, Python, Matlab, SQL, R, SAS, Stata, Eviews

SELECTED RESEARCH PAPERS

"Finite Sample Performance of Principal Components Estimators in Dynamic Factor Models: Asymptotic vs. Bootstrap Approximations," forthcoming at *Econometric Reviews*.

"A Class of Fat-Tailed Residuals for Log-Returns Consistent with Finite Asset Price Expectations," submitted for publication.

"Models with Short-Term Variations and Long-Term Dynamics in Risk Management of Commodity Derivatives," submitted for publication.

"A Framework of Stress Scenarios Selection for Market Risks of Derivatives Portfolios," working paper.

OTHERS

Invited Conference Presentations: University of Notre Dame, University of Kentucky, Nanyang Technological University in Singapore, Otaru University of Commerce in Japan, SIAM Conference on Financial Mathematics & Engineering.

Referees: Journal of Econometrics, Canadian Journal of Economics, Macroeconomic Dynamics, Frontier of Economics in China, Journal of Money, Credit and Banking.

Certifications: FRM; CFA Level II candidate.