

CURRICULUM VITÆ

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Associate Professor

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• **Education**

Columbia University, Business, Ph.D., May 2001.

Stanford University, Statistics, M.S., January 1998.

University of Chicago, Mathematics, S.B., June 1996.

• **Professional Experience**

Associate Professor (2007–present), Assistant Professor (2003–2007), Department of Industrial Engineering and Management Sciences, Northwestern University.

Assistant Professor (2002–2003), Visiting Assistant Professor (2001–2002), School of Operations Research and Industrial Engineering, Cornell University.

Preceptor, Graduate School of Business, Columbia University (2001).

Associate, Quantitative Equity Derivatives, Banc of America Securities (1999–2000).

Director of Research (1998–1999), Research Analyst (1997–1998), PARADIGM Capital Management.

• **Honors**

Pentair-Nugent Professor, Northwestern University, 2009–2012.

Fellow, Center for Financial Research, Federal Deposit Insurance Corporation, 2009–2010.

IBM Faculty Award, 2009.

Meritorious Service Award, *Operations Research*, 2008.

Graduate Teaching Award, Northwestern University Dept. of IEMS, 2005, 2009.

National Science Foundation Graduate Research Fellow, 1997–2000.

Student Marshal, University of Chicago, 1995–1996.

Elected to Sigma Xi scientific research society, 1996, and to Phi Beta Kappa, 1995.

• **Publications**

Journal Articles

- H. Lan, B. L. Nelson, and J. Staum. “A Confidence Interval Procedure for Expected Shortfall via Two-Level Simulation,” forthcoming, *Operations Research*.

- B. Ankenman, B. L. Nelson, and J. Staum. “Stochastic Kriging for Simulation Meta-modeling,” forthcoming, *Operations Research*.
- R. E. Baysal and J. Staum. “Empirical Likelihood for Value at Risk and Expected Shortfall,” *Journal of Risk* 11:1 (2008), 3–32.
- V. Lesnevski, B. L. Nelson, and J. Staum. “An Adaptive Procedure for Simulating Coherent Risk Measures Based on Generalized Scenarios,” *Journal of Computational Finance* 11:4 (2008), 1–31.
- V. Lesnevski, B. L. Nelson, and J. Staum. “Simulation of Coherent Risk Measures Based on Generalized Scenarios,” *Management Science* 53 (2007), 1756–1769.
- B. L. Nelson and J. Staum. “Control Variates for Screening, Selection and Estimation of the Best,” *ACM Transactions on Modeling and Computer Simulation* 16 (2006), 52–75.
- J. Staum. “Fundamental Theorems of Asset Pricing for Good Deal Bounds,” *Mathematical Finance* 14 (2004), 141–161.
- P. Glasserman and J. Staum. “Resource Allocation among Simulation Time Steps,” *Operations Research* 51 (2003), 908–921.
- P. Glasserman and J. Staum. “Conditioning on One-Step Survival for Barrier Option Simulations,” *Operations Research* 49 (2001), 923–937.
- J. M. Park and J. C. Staum. “Fund of Funds Diversification: How Much is Enough?” *Journal of Alternative Investments* 1 (1998), 39–42.

Book Chapters

- J. Staum. “Monte Carlo Computation in Finance,” forthcoming in *Monte Carlo and Quasi-Monte Carlo Methods 2008*, ed. P. L’Ecuyer and A. B. Owen, to be published by Springer-Verlag.
- S. C. Tsai, B. L. Nelson, and J. Staum. “Combined Screening and Selection of the Best with Control Variates,” in *Advancing the Frontiers of Simulation: A Festschrift in Honor of George Samuel Fishman*, ed. C. Alexopoulos, D. Goldsman, and J. R. Wilson, Springer-Verlag (2009).
- J. Staum. “Incomplete Markets,” Chapter 12 in *Handbooks in Operations Research and Management Science Vol. 15: Financial Engineering*, ed. J. R. Birge and V. Linetsky, Elsevier (2008).

Refereed Conference Proceedings

- J. Staum. “Better Simulation Metamodeling: The Why, What, and How of Stochastic Kriging,” forthcoming in *Proceedings of the 2009 Winter Simulation Conference*, ed. M. D. Rossetti, R. R. Hill, B. Johansson, A. Dunkin, and R. G. Ingalls.
- M. Liu and J. Staum. “Estimating Expected Shortfall with Stochastic Kriging,” forthcoming in *Proceedings of the 2009 Winter Simulation Conference*, ed. M. D. Rossetti, R. R. Hill, B. Johansson, A. Dunkin, and R. G. Ingalls.
- B. Ankenman, B. L. Nelson, and J. Staum. “Stochastic Kriging for Simulation Meta-modeling,” in *Proceedings of the 2008 Winter Simulation Conference*, ed. S. J. Mason, R. R. Hill, L. Mönch, O. Rose, T. Jefferson, and J. W. Fowler, IEEE Press, 362–370.

- R. E. Baysal, B. L. Nelson, and J. Staum. “Response Surface Methodology for Simulating Hedging and Trading Strategies,” in *Proceedings of the 2008 Winter Simulation Conference*, ed. S. J. Mason, R. R. Hill, L. Mönch, O. Rose, T. Jefferson, and J. W. Fowler, IEEE Press, 629–637.
- H. Lan, B. L. Nelson, and J. Staum. “A Confidence Interval for Tail Conditional Expectation via Two-Level Simulation,” in *Proceedings of the 2007 Winter Simulation Conference*, ed. S. G. Henderson, B. Biller, M.-H. Hsieh, J. Shortle, J. D. Tew, and R. R. Barton, IEEE Press, 949–957.
- H. Lan, B. L. Nelson, and J. Staum. “Two-Level Simulations for Risk Management,” in *Proceedings of the 2007 INFORMS Simulation Society Research Workshop*, INSEAD, ed. S. Chick, C.-H. Chen, S. G. Henderson, and E. Yücesan, 102–107.
- V. Lesnevski, B. L. Nelson, and J. Staum. “An Adaptive Procedure for Simulating Coherent Risk Measures Based on Generalized Scenarios,” in *Proceedings of the 2006 Winter Simulation Conference*, ed. L. F. Perrone, F. P. Wieland, J. Liu, B. G. Lawson, D. M. Nicol, and R. M. Fujimoto, IEEE Press, 733–740.
- V. Lesnevski, B. L. Nelson, and J. Staum. “Simulation of Coherent Risk Measures,” in *Proceedings of the 2004 Winter Simulation Conference*, ed. R. G. Ingalls, M. D. Rossetti, J. S. Smith, and B. A. Peters, IEEE Press, 1579–1585.
- J. Staum, S. Ehrlichman, and V. Lesnevski. “Work Reduction in Financial Simulations,” in *Proceedings of the 2003 Winter Simulation Conference*, ed. S. Chick, P. J. Sánchez, D. Ferrin, and D. J. Morrice, IEEE Press, 311–318.
- J. Staum. “Efficient Simulations for Option Pricing,” in *Proceedings of the 2003 Winter Simulation Conference*, ed. S. Chick, P. J. Sánchez, D. Ferrin, and D. J. Morrice, IEEE Press, 258–266.
- J. Staum. “Simulation in Financial Engineering,” in *Proceedings of the 2002 Winter Simulation Conference*, ed. E. Yücesan, C.-H. Chen, J. L. Snowdon, and J. M. Charnes, IEEE Press, 1481–1492.
- P. Glasserman and J. Staum. “Stopping Simulated Paths Early,” in *Proceedings of the 2001 Winter Simulation Conference*, ed. B. A. Peters, J. S. Smith, D. J. Medeiros, and M. W. Rohrer, IEEE Press, 318–324.
- J. Staum. “Simulation in Financial Engineering,” in *Proceedings of the 2001 Winter Simulation Conference*, ed. B. A. Peters, J. S. Smith, D. J. Medeiros, and M. W. Rohrer, IEEE Press, 123–133.

Working Papers

- J. Staum. “Systemic Risk Components as Deposit Insurance Premia.”
- Y. Sun, D. W. Apley, and J. Staum. “ $1\frac{1}{2}$ -level Simulation for Estimating the Variance of a Conditional Expectation.”
- M. Liu and J. Staum. “Estimating Expected Shortfall with Stochastic Kriging.”
- M. Liu, B. L. Nelson, and J. Staum. “An Adaptive Procedure for Point Estimation of Expected Shortfall,” Northwestern IEMS working paper 08-03.

Technical Reports

- J. Staum. “Pricing and Hedging in Incomplete Markets: Fundamental Theorems and Robust Utility Maximization,” Cornell ORIE Technical Report 1351 (2003).
- J. Staum. “Ideological Platforms and Probabilistic Voting Equilibria,” Cornell ORIE Technical Report 1344 (2002).
- J. M. Park and J. C. Staum. “Performance Persistence in the Alternative Investment Industry,” technical report, PARADIGM Capital Management (1998).

• **Sponsored Research and Corporate Gifts**

“Stochastic Kriging: Modeling and Controlling Uncertainty in Simulation,” National Science Foundation Grant No. CMMI-0900354 (2009–2012), PI; with co-PIs Bruce Ankenman and Barry Nelson.

IBM Faculty Award, 2009.

Unrestricted gift, NVIDIA Corporation, 2008.

“CIEG: High-Performance Computing for Design of Risk Management Simulation Procedures,” National Science Foundation Grant No. CMMI-0823273 (2008-2009), PI; with co-PI Barry Nelson (supplement to CMMI-0555485).

“Simulating Coherent Risk Measures,” National Science Foundation Grant No. CMMI-0555485 (2006–2009), PI; with co-PI Barry Nelson.

“Theoretical and Applied Probability on Stochastic Calculus, Numerical Methods, and Mathematical Finance,” National Security Agency Grant No. H98230-04-1-0047 (2004–2006), PI.

“Theoretical and Applied Probability on Stochastic Calculus, Numerical Methods, and Mathematical Finance,” National Science Foundation Grant No. DMS-0202958 (2002–2005), co-PI; with PI Philip Protter.

• **Presentations**

Invited Seminars

1. “Systemic Risk: The Next Frontier in Risk Management and Regulation,” IBM T. J. Watson Research Center, July 2009.
2. “Systemic Risk: The Next Frontier in Risk Management and Regulation,” Mornings at McCormick, McCormick School of Engineering and Applied Science, Northwestern University, May 2009.
3. Panelist, “Financial Engineering: Lessons From The Current Financial Crisis,” Dean’s Seminar Series, McCormick School of Engineering and Applied Science, Northwestern University, November 2008.
4. “Stochastic Kriging and its Applications,” Dept. of Applied Mathematics, Illinois Institute of Technology, September 2008.
5. “Two-Level Simulations for Risk Measurement,” Dept. of Mathematical Sciences, New Mexico State University, February 2008.
6. “Two-Level Simulations for Risk Measurement,” Dept. of MS&E, Stanford University, February 2008.

7. "Two-Level Simulations for Risk Measurement," Dept. of IEOR, University of California at Berkeley, February 2008.
8. "Two-Level Simulations for Risk Measurement," School of ORIE, Cornell University, August 2007.
9. "Two-Level Simulations for Risk Measurement," Dept. of Applied Mathematics, Illinois Institute of Technology, April 2007.
10. "Simulation for Risk Measurement," Dept. of IEOR, Columbia University, February 2007.
11. "An Empirical Likelihood Confidence Region for Value-at-Risk and Tail Conditional Expectation," Dept. of Mathematics, University of Chicago, April 2006.
12. "An Empirical Likelihood Confidence Region for Value-at-Risk and Tail Conditional Expectation," Dept. of Mathematics, Purdue University, March 2006.
13. "Simulation of Coherent Risk Measures" and "Work Reduction in Financial Simulations," JP Morgan Chase, New York City, January 2005.
14. "Conjugate Duality in Pricing, Hedging, and Portfolio Optimization," Dept. of Mathematical Sciences, University of Texas at El Paso, October 2004.
15. "Pricing and Hedging in Incomplete Markets: Fundamental Theorems and Robust Utility Maximization," Fuqua School of Business, Duke University, January 2003.
16. "Pricing and Hedging in Incomplete Markets: Fundamental Theorems and Robust Utility Maximization," Institute for Mathematics, Humboldt University of Berlin, January 2003.
17. "Pricing and Hedging in Incomplete Markets: Fundamental Theorems and Robust Utility Maximization," Dept. of Mathematics, Federal Institute of Technology (ETH) Zürich, January 2003.
18. "Pricing and Hedging in Incomplete Markets: Fundamental Theorems and Robust Utility Maximization," Cornell Theory Center Manhattan, December 2002.
19. "Pricing and Hedging in Incomplete Markets: Fundamental Theorems and Robust Utility Maximization," Courant Institute of Mathematical Sciences, New York University, October 2002.
20. "Pricing and Hedging in Incomplete Markets: Fundamental Theorems and Robust Utility Maximization," Dept. of IEMS, Northwestern University, October 2002.
21. "Pricing and Hedging in Incomplete Markets: Fundamental Theorems and Robust Utility Maximization," School of ORIE, Cornell University, October 2002.
22. "Risk Measures and Pricing in Incomplete Markets," Dept. of Mathematics, University of Buenos Aires, December 2001.
23. "Importance Sampling with Non-Equivalent Measures," Dept. of Mathematics, Cornell University, October 2001.

Invited Conference Presentations

1. "1 $\frac{1}{2}$ -level Simulation," 15th INFORMS Applied Probability Society Conference, Ithaca, NY, July 2009.

2. "Systemic Risk: The Next Frontier in Risk Management and Regulation," Modeling High Frequency Data in Finance, Hoboken, NJ, July 2009.
3. "Response Surface Methodology for Simulating Hedging and Trading Strategies," Efficient Monte Carlo: From Variance Reduction to Combinatorial Optimization, Sønderborg, Denmark, July 2008.
4. "Simulation on Demand," 8th International Conference on Monte Carlo and Quasi-Monte Carlo Methods in Scientific Computing, Montréal, July 2008.
5. "Monte Carlo and Quasi-Monte Carlo Methods in Finance," 8th International Conference on Monte Carlo and Quasi-Monte Carlo Methods in Scientific Computing, Montréal, July 2008.
6. "A Confidence Interval for Tail Conditional Expectation via Two-Level Simulation," Winter Simulation Conference, Washington, DC, December 2007.
7. "An Adaptive Procedure for Simulating Coherent Risk Measures Based on Generalized Scenarios," Winter Simulation Conference, Monterey, CA, December 2006.
8. "Robustness and Ambiguity Aversion in Portfolio Optimization and Derivative Security Pricing," 3rd Rutgers-Stevens Workshop on Optimization of Stochastic Systems, Piscataway, NJ, September 2005.
9. "Simulation of Coherent Risk Measures," Winter Simulation Conference, Washington, DC, December 2004.
10. "Simulation of Coherent Risk Measures," INFORMS Annual Meeting, Denver, October 2004.
11. "Good Deal Bounds for Valuation of Real and Financial Options," INFORMS Annual Meeting, Denver, October 2004.
12. "Conjugate Duality in Pricing, Hedging, and Portfolio Optimization," AMS Western Sectional Meeting, Albuquerque, October 2004.
13. "Efficient Simulations for Option Pricing," Winter Simulation Conference, New Orleans, December 2003.
14. "Work Reduction in Financial Simulations," Winter Simulation Conference, New Orleans, December 2003.
15. "Work Reduction in Financial Simulations," INFORMS Annual Meeting, Atlanta, October 2003.
16. "Simulation in Financial Engineering," Winter Simulation Conference, San Diego, December 2002.
17. "Simulation in Financial Engineering," Winter Simulation Conference, Arlington, Virginia, December 2001.
18. "Early Stopping in Financial Simulations," Randomized Algorithms in Finance, Mathematical Sciences Research Institute, Berkeley, California, March 2001.
19. "Conditioning on One-Step Survival for Barrier Option Simulations," INFORMS Annual Meeting, Philadelphia, November 1999.

Contributed Conference Presentations

1. “Response Surface Methodology for Simulating Hedging and Trading Strategies,” Winter Simulation Conference, Miami, FL, December 2008.
2. “Two-Level Simulations for Risk Measurement,” 2007 INFORMS Simulation Society Workshop, Fontainebleau, France, July 2007.
3. “Good Deal Bounds for Valuation of Real and Financial Options,” Bachelier Finance Society 3rd World Congress, Chicago, IL, July 2004.
4. “Ideological Platforms and Probabilistic Voting Equilibria,” Public Choice Society, San Diego, CA, March 2002.
5. “Conditioning on One-Step Survival for Barrier Option Simulations,” Computational Intelligence in Financial Engineering, New York City, March 1999.

• **Service**

Service to Northwestern

IEMS Graduate Committee member (2009–present).

Undergraduate advisor (2009–present), freshman advisor (2003–2009).

IEMS faculty search committee member (2009–2010).

IEMS departmental seminar coordinator (2006–2007).

IEMS honors program chair (2004–2009).

IEMS Undergraduate Committee member (2003–2009).

Editorial Service

Department Editor for Financial Engineering, *IIE Transactions* (2009–present).

Associate Editor of *Operations Research* (2006–present).

Associate Editor of *Naval Research Logistics* (2006–2009).

Associate Editor of *ACM Transactions on Modeling and Computer Simulation* (2006–2009).

Referee for journals including *Algorithmica*, *Finance and Stochastics*, *INFORMS Journal on Computing*, *Journal of Computational Finance*, *Journal of Econometrics*, *Management Science*, *Mathematical Finance*, *Mathematical Programming*, *Operations Research*, *Operations Research Letters*, *Quantitative Finance*, *Reliable Computing*, *SIAM Journal on Applied Mathematics*, and *Stochastic Processes and their Applications*.

Professional Service

Program committee, INFORMS Applied Probability Society Conference 2009.

Track coordinator, Winter Simulation Conference 2007.

Session coordinator, INFORMS Annual Meeting 2004, Winter Simulation Conferences 2004 and 2006.

Grant proposal reviewer for National Science Foundation, National Security Agency, and Natural Sciences and Engineering Research Council of Canada.

Book proposal reviewer for Cambridge University Press, Duxbury Press, and Houghton Mifflin.

- **Ph.D. Student Advising and Co-Advising**

Vadim Lesnevski, “Simulation of Coherent Risk Measures Based on Generalized Scenarios,” December 2006.

R. Evren Baysal, “Advances in Risk Management Simulation,” December 2008.

Hai Lan, “Two-Level Simulation of Expected Shortfall: Confidence Intervals, Efficient Simulation Procedures, and High-Performance Computing,” expected graduation 2009.

Ming Liu, “Efficient Simulation in Financial Risk Management,” expected graduation 2010.

Wei Xie, expected graduation 2012.

- **Courses Taught**

- **Northwestern University**

- IEMS 315 Stochastic Models and Simulation

- IEMS 326 Economics and Finance for Engineers

- IEMS 460-2 Stochastic Models II

- IEMS 465 Simulation Experiment Design and Analysis

- IEMS 475 Simulation in Financial Engineering

- **Cornell University**

- ORIE 468/568 Financial Engineering with Stochastic Calculus I

- ORIE 469/569 Financial Engineering with Stochastic Calculus II

- ORIE 565 Applied Financial Engineering

- **Columbia University**

- FINC 9311 Continuous Time Finance