

Last updated: August 2012

Lan Zhang

Personal:

Office Address: Department of Finance (mc 168)
The University of Illinois at Chicago
601 S. Morgan St
Chicago, IL 60607-7124
Phone: (312) 413 - 8372
Email: lanzhang@uic.edu
URL: <http://tigger.uic.edu/~lanzhang>

Research Interests:

Financial econometrics, market microstructure, High frequency econometrics, statistical arbitrage and trading, the interface between statistics and finance.

Education:

University of Chicago, Ph.D. in Statistics, June 2001
Dissertation: *From Martingales to ANOVA: Implied and Realized Volatility*
Princeton University, Exchange Scholar Program, Bendheim Center for Finance (Department of Economics, Department of Operations Research & Financial Engineering), September 2000 - May 2001
University of Chicago, M.A. in Psychology, June 1995
Master's Thesis: *Requests and Subsequent Compliance in Infant-parent Interaction*
Peking University, P.R. China, B.S. Psychology, July 1992

Employment:

University of Illinois at Chicago (UIC), Professor of Finance, August 2010 - present
Oxford University, Associate member, Oxford-Man Institute of Quantitative Finance, 2010 - present
University of Illinois at Chicago (UIC), Associate Professor of Finance (with tenure), August 2008 - July 2010 (on leave from August 2009)
Oxford University, Reader in Finance and Econometrics, Oxford-Man Institute of Quantitative Finance and Saïd Business School, visiting from August 2009 - July 2010

University of Illinois at Chicago (UIC), Assistant Professor of Finance,
August 2005 - July 2008

Carnegie Mellon University (CMU), Associate Professor of Statistics and
in the Center for Computational Finance, effective in July 2006 (on leave
from August 2005, then left for UIC)

University of Chicago, Visiting Scholar in Financial Mathematics, May -
July 2002.

Carnegie Mellon University (CMU), Assistant Professor of Statistics and
in the Center for Computational Finance, September 2001 - 2006.

Editorial Activity:

Frontiers of Statistics in China, Associate Editor (January 2012 -)

Econometric Theory, Associate Editor (June 2011 - May 2015)

Annals of Applied Statistics, Associate Editor (2010 - present)

Statistics and Its Interface, Associate Editor (2007 - present)

referee for various leading journals in Econometrics, Finance, and Statistics, in-
cluding *Econometrica*, *Review of Financial Studies*, *Journal of The Amer-
ican Statistical Association*, *Annals of Statistics* and others.

Grants

Dean's research grant on Centers of Research Excellence, College of Business
Administration, University of Illinois at Chicago (2011-2013)

Oxford-Man Institute research fund, Oxford University (2009-2010)

Research fund from the International Center for Futures and Derivatives (2007,
2008)

National Science Foundation DMS-0204639 (2002-2005)

Morgan Stanley Research Fund on Market Microstructure (2004-2005)

National Institute of Health RO1 AG023141-01 (2003-2006)

National Science Foundation travel fund, ISI 2005 (April 2005)

National Science Foundation 0125083 "US Junior Oberwolfach Fellows" (Jan-
uary 2004)

National Science Foundation Travel DMS-9979534 (2000)

PhD and Master degree advisee:

Aurora Bi, PhD, graduated in summer 2006, Department of Statistics, Carnegie Mellon University (CMU). Currently at Merrill Lynch.

Xiaowei Gong, PhD student in Business Statistics Program, expected to graduate in May 2013, College of Business Administration, UIC,

Richard Z.X. Kang, PhD in Business Statistics Program, graduated in June 2008, College of Business Administration, UIC. Currently a tenure-track assistant professor at the Department of Economics, Finance, and Decision Sciences, University of North Carolina at Pembroke

Xinming Liu, PhD, graduated in spring 2004, Tepper School of Business, CMU. Currently at SG Corporate & Investment Banking

Sotirios Damouras, Master Thesis, Department of Statistics, CMU, 2004.

Jian Su, PhD in Business Statistics Program, graduated in December 2011, College of Business Administration, UIC. Currently at Ernst and Young, New York.

Jin Zhang, PhD in Business Statistics Program, graduated in May 2011, College of Business Administration, UIC. Currently at Discover.

Professional and Academic Service:

Advisory Committee, Department of Finance, University of Illinois at Chicago (2011-2012)

CBA Dean Search Committee, University of Illinois at Chicago (2011-2012)

CBA Dean Search Firm Selection Committee (Fall 2011)

Faculty Senate, University of Illinois at Chicago (2011 - 2013)

CBA Tenure and Promotion Committee (acting in the capacity of Executive Committee in the cases of promotions to full professors, Fall 2011).

The Business Statistics Area-of-Inquiry, College of Business Administration, University of Illinois at Chicago (2006-present). Duty includes PhD admission.

Faculty recruiting committee in the Finance Department (2011-2012)

Math Curriculum Committee, College of Business Administration, University of Illinois at Chicago (Spring 2011)

Finance Department representative in the PhD program, College of Business Administration, University of Illinois at Chicago (2010- 2011)

International Center for Futures and Derivatives, Advisory Board (2007 - present)

Quantitative Finance on Friday, Planning committee. This monthly speaker series takes place at the Chicago Exchanges. (2007 - present)

Faculty Search Committee for the Department of Information & Decision Sciences (2008, 2009)

Department of Finance Seminar, Co-Organizer, UIC (2005 - 2008)

Conference on Volatility and High Frequency Data, Co-Organizer (April 2007)

ASA Pittsburgh Chapter, Vice-President (2004 - 2005)

Department of Statistics Seminar Committee, Chair, Carnegie Mellon University (2003 - 2005)

Faculty Senate, Carnegie Mellon University (2003 -2005)

University Committee on Special Faculty Appointments, Carnegie Mellon University (2003 -2005)

Academic Associations:

American Finance Association

Bachelier Finance Society

Econometric Society

Society for Financial Econometrics

American Statistical Association

Institute of Mathematical Statistics

Teaching:

“Advanced Quantitative Methods”, new curriculum, in preparation (2012, UIC).

“Investments” (Fall 2008, Fall 2010, Spring 2011, and Spring 2012, UIC)

“Statistics for Financial Markets” (Spring and Fall 2008, UIC)

“Introduction to Managerial Finance” (Fall 2007, UIC)

“Introduction to Corporate Finance” (Spring 2007, UIC)

“Empirical Issues in Finance” (Spring 2007, Fall 2008, Fall 2011, UIC)

“Financial Decision Making” (Fall 2006, UIC)

“Theory and Structure of Futures and Options Markets” (Fall 2006, UIC)

“Portfolio Analysis” (Spring 2006, CNA MBA Cohort, UIC)

“Advanced Topics in Portfolio Analysis” (Fall 2005, MBA program in Financial Markets and Trading, UIC)

“Statistical Arbitrage and Trading” (Fall 2004, for the computational finance program, CMU)

“Time Series Analysis” (Fall 2004, CMU)

“Introduction to Statistical Inference” (Fall 2003, Fall 2004, for the computational finance program, CMU)

“Introduction to Probability” (Fall 2003, for the computational finance program, CMU)

“Advanced Probability II” (Spring 2003, CMU)

“Intermediate Probability” (Spring 2002 and Spring 2003, CMU)

Publications and Manuscripts

A. Published

1. Implied and realized volatility: Empirical model selection. Zhang, L., *Annals of Finance*, **8 (2)**, 259-275, 2012.
2. The econometrics of high frequency data. Mykland, P.A. and Zhang, L., *Statistical Methods for Stochastic Differential Equations*, M. Kessler, A. Lindner, and M. Sørensen, eds. Chapman & Hall/CRC Press, 109- 190, June 2012.
3. The Double Gaussian Approximation for High Frequency Data. Mykland, P.A., and Zhang, L., *Scandinavian Journal of Statistics*, **38 (2)**, 215-236, June 2011.
4. Estimating covariation: Epps effect, microstructure noise. Zhang, L. , *Journal of Econometrics*, **160**, 33-47, 2011
5. Edgeworth expansions for realized volatility and related estimators. Zhang, L., Mykland, P.A., and Aït-Sahalia, Y., *Journal of Econometrics*, **160**, 190-203, 2011.
6. Ultra high frequency volatility estimation with dependent microstructure noise. Aït-Sahalia, Y., Mykland, P.A. and Zhang, L., *Journal of Econometrics*, **160**, 160-175, 2011.
7. Forecasting return volatility in the presence of microstructure noise. Kang, Z.X., Zhang, L., and Chen, R., *Statistics and Its Interface*, **3 (2)**, 145-158, 2010.
8. Inference for continuous semimartingales observed at high frequency. Mykland, P.A. and Zhang, L., *Econometrica*, **77 (5)**, 1403-1445, 2009.
9. Inference for Volatility-Type Objects and Implications for Hedging. Mykland, P.A. and Zhang, L. , *Statistics and Its Interface*, **1**, 255-278, 2008.
10. Efficient Estimation of Stochastic Volatility Using Noisy Observations: A Multi-Scale Approach. Zhang, L, *Bernoulli*, **12 (6)**, 1019-1043, 2006.
11. ANOVA for diffusions and Ito processes. Mykland, P.A. and Zhang, L., *Annals of Statistics*, **34 (4)**, 1931-1963, 2006.
12. Comment on "Realized Variance and Market Microstructure Noise" by P.R. Hansen and A. Lunde. Aït-Sahalia, Y., Mykland, P.A. and Zhang, L. *Journal of Business and Economic Statistics*, **24 (2)**, 162-167, April 2006.

13. A tale of two time scales: Determining integrated volatility with noisy high frequency data. Zhang, L., Mykland, P.A. and Aït-Sahalia, Y. *Journal of The American Statistical Association*, **100 (472)**, 1394-1411, December 2005.
14. Comment: A selective overview of nonparametric methods in financial econometrics. Mykland, P.A. and Zhang, L. *Statistical Science*, **20 (4)**, 347-350, December 2005.
15. How often to sample a continuous-time process in the presence of market microstructure noise. Aït-Sahalia, Y., Mykland, P.A. and Zhang, L. *Review of Financial Studies*, **18**, 351-416, April 2005.
16. Trends in the vertical distribution of ozone: A comparison of two analyses of ozonesonde data. Logan JA, Megretskaya IA, Miller AJ, Tiao GC, Choi D, Zhang L, Stolarski RS, Labow GJ, Hollandsworth SM, Bodeker GE, Claude H, De Muer D, Kerr JB, Tarasick DW, Oltmans SJ, Johnson B, Schmidlin F, Staehelin J, Viatte P, Uchino O, *Journal of Geophysical Research - Atmospheres*, **104 (D21)**, 26373-26399, Nov 1999.
17. Update of Umkehr ozone profile data trend analysis through 1997. Reinisel GC, Tiao GC, Miller AJ, Nagatani RM, Wuebbles DJ, Weatherhead EC, Cheang WK, Zhang L, Flynn LE, Kerr JB, *Journal of Geophysical Research - Atmospheres*, **104 (D19)**, 23881-23898, Oct 1999.
18. Delay or probability discounting in a model of impulsive behavior: Effect of alcohol. Richards J, Zhang L, Mitchell S, and de Wit H, *Journal of the Experimental Analysis of Behavior*, **71**, 121-143, 1999.
19. Ability and development of facial expression recognition in infancy. Wang L, Zhang L, Li L, *Beijing Psychological Bulletin*, **2 (2)**, 169-175, 1994.

B. In Revision, Submitted, Working Papers

1. Realized volatility when sampling times can be endogenous. Li, Y., Mykland, P.A., Renault, E., Zhang, L. and Zheng, X. In revision for *Econometric Theory*.
2. The algebra of two scales estimation: High frequency estimation that is robust to sampling times. Mykland, P.A. and Zhang, L.,
3. Bayesian inference in high frequency data. Mykland, P.A. and Zhang, L.
4. Between data cleaning and Inference: Pre-Averaging and other robust estimators of the efficient price. Mykland, P.A. and Zhang, L.

5. What you don't know cannot hurt you: On the detection of small jumps.
Zhang, L.

C. Presentations and Invited Talks

Year 2010 and later:

1. Invited lectures at the Mathematical Sciences Center, Tsinghua University, China (August 2012)
2. NUS-Santander Doctorate Workshop in Advanced Financial Risk Management Volatility Models, invited talk, Singapore (July 2012)
3. Financial Engineering and Risk Management International Symposium 2012, invited talk, Changsha, China (July 2012)
4. Eighth World Congress in Probability and Statistics, invited talk, Istanbul, Turkey (July 2012).
5. "The Algebra of High Frequency Estimation", plenary talk at the Fifth Annual Conference of The Society for Financial Econometrics, Oxford, UK (June 2012).
6. "Estimating Covariation: Epps Effect, Microstructure Noise", invited talk at the Tsinghua Sanya International Mathematics Forum, China (December 2011).
7. Panel discussion of Sir James Mirrlees (1996 Nobel Prize Laureate in Economic Sciences) speech on "Optimal Saving, Investment and Growth in Open Economies", at the Tsinghua Sanya International Economics Roundtable Conference, China (December 2011).
8. "Microstructure Noise and High Frequency Inferences", invited talk at the Guanghua School of Management, Peking University, China (July 2011).
9. "Between Data Cleaning and Inference: Pre-Averaging and other Robust Estimators of the Efficient Price", invited talk at the Fifth Annual Risk Management Conference, Risk Management Institute, National University of Singapore (July 2011).
10. invited discussant and contributed talk at the American Economic Association and the American Finance Association annual Meeting, Denver, 6-9 January 2011
11. invited talk at ISBIS-2010, Slovenia, 6-9 July 2010

12. invited seminar at Imperial College Business School, London, UK, 22 June 2010
13. plenary talk at the 23rd Nordic Conference on Mathematical Statistics, Voss, Norway, 14-17 June 2010
14. invited talk at the MMF-CEF workshop in Financial Econometrics, Brunel University, UK, 26 May 2010
15. invited talk at Toulouse School of Economics Financial Econometrics Conference, Toulouse, France, 21-22 May 2010
16. invited seminar at London School of Economics and Political Science, London, UK, 6 May 2010
17. Oxford Man Institute seminar, University of Oxford, 20 April 2010
18. invited seminar at the Mathematical and Computational Finance Group Internal Seminar, University of Oxford, UK, 4 February 2010

Year 2009: On maternity leave from March to May.

Year 2008

1. invited talk at the CME Group University Research Roundtable, November 2008
2. invited seminar at the Saïd Business School, Oxford University, UK, November 2008
3. invited seminar at the Zell Center Seminar Series on Quantitative Finance, Kellogg School of Management, Northwestern University, October 2008
4. invited seminar at the Oxford-Man Institute, Oxford University, UK, July 2008
5. invited talk at the "Risk Management Workshop", Mathematisches Forschungsinstitut Oberwolfach, Germany, March 2008
6. invited seminar at the Department of Finance, University College Dublin, Ireland, March 2008
7. invited seminar at the Department of Finance, Hong Kong University of Science and Technology, Hong Kong, February/March 2008

8. invited seminar at the School of Operations Research and Information Engineering, Cornell University, January 2008

Year 2007

1. invited talk at International Statistical Institute 2007, Lisboa, Portugal, August 22-29, 2007.
2. invited seminar at the Department of Finance and Management Science, Norwegian School of Economics and Business Administration. Bergen, Norway, May 22, 2007.
3. invited joint seminar at the Department of Finance, and Department of Statistics, London School of Economics. London, UK, May 15, 2007.
4. invited talk at the Séminaire Européen de Statistique 2007, Cartagena, Spain, May 5-12, 2007.
5. invited talk at the Conference on Volatility and High Frequency Data, University of Chicago, April 21-22, 2007.

Year 2006

1. contributed talk at the Bachelier Finance Society 2006 Fourth World Congress, Tokyo, Japan, August 17-20, 2006
2. contributed talk at the Far Eastern Meeting of the Econometric Society, Beijing, China, July 9 - 12, 2006
3. invited talk at the 2006 International Symposium on Financial Engineering and Risk Management, at Xiamen, China, July 5 to 6, 2006
4. invited talk at the CIREQ Conference on Realized Volatility, Montreal, Canada, April 22 - 23, 2006

Year 2005

1. seminar talk at Department of Mathematics, Statistics and Computer Science, University of Illinois at Chicago. September 14, 2005
2. Invited talk at the 25th European Meeting of Statisticians conference, Oslo, Norway, July 24-28 2005
3. Invited visit to the Isaac Newton Institute, on Developments in Quantitative Finance, Cambridge, UK, July 11-22, 2005

4. Invited talk at the Joint Meeting of Chinese Society of Probability and Statistics (CSPS) and the Institute of Mathematical Statistics (IMS), Beijing, China, July 9-12, 2005
5. Invited talk at the Conference on Financial Engineering and Risk Management, Shanghai, China, July 3-4, 2005.
6. Invited talk at the Princeton/Chicago conference on the Econometrics of High Frequency Financial Data, Bonita Springs, Florida on June 23-26, 2005.
7. Invited talk at the CIRANO-CIREQ Financial Econometrics, Montreal, Canada, May 20-21, 2005.
8. Contributed talk at International Statistical Institute 2005, Sydney, Australia, April 5-12, 2005

Year 2004 and before

1. Determining integrated volatility with noisy high-frequency data, contributed talk in Third World Congress of the Bachelier Financial Society, Chicago, IL, July 21-24, 2004
2. Determining integrated volatility with noisy high-frequency data, invited participation in workshop on “Statistics in Finance”, Oberwolfach, Germany, January, 2004.
3. A tale of two time scales on estimating integrated volatility, invited talk in the New Researcher Conference, Davis, CA, July 2003; also presented at the Joint Statistical Meeting, San Francisco, CA, August 2003.
4. Analysis of variance for continuous stochastic process, invited talk in IMS Annual Meeting, Banff, Canada, July 2002.
5. A no-arbitrage relationship between implied and realized volatility, invited talk at the Department of Finance, University of Illinois at Chicago, April 2002.
6. Discretization effect of a diffusion process, discussion session in Stochastic Process Workshop, Princeton, March 2002.
7. Inference for volatility-type objects and implications for hedging, presented at the Center of Computational Finance, Carnegie Mellon University, October 2001.

8. From martingales to ANOVA: Implied and realized volatility, invited talk at Carnegie Mellon University, Cornell University, Purdue University, Princeton University, University of Maryland at Baltimore, University of North Carolina at Chapel Hill, University of Pennsylvania, January – March 2001.
9. Analysis for diffusions, presented in IMS Annual Meeting/5th World Congress of Bernoulli Society, Guanajuato, Mexico, May 2000.
10. Historical vs. implied volatility - a theoretical connection and how to estimate it, presented in ENAR/IMS Regional Meeting, Chicago, March 2000.
11. Analysis of phase effect of aerosol on solar cycle, Miller AJ, Tiao GC, and Zhang L, presented in ozone meeting, Chicago, September 1999.
12. Estimates of number of years to detect ozone trend change, and estimation uncertainty with or without missing observations. Meng, XL, Tiao GC, and Zhang L, quarterly reports in ozone meeting, Chicago, January 1999; Washington DC, May 1999.
13. Sensitivity of ozone trend estimates to AR and outliers, Tiao GC and Zhang L, quarterly report and presentation in ozone meeting, Chicago, summer 1998; Washington DC, fall 1998.
14. Seasonal trend, seasonal variance analysis of ozonesonde data during 1970-1997. Choi D and Zhang L, quarterly report and presentation in ozone meeting, Chicago, winter 1997; Washington DC, spring 1998.