RÉSUMÉ of ZONGWU CAI

September 26, 2008

ADDRESS:

Department of Mathematics and Statistics
Department of Economics
University of North Carolina at Charlotte
Charlotte, NC 28223
Tel: (704) 687-2650, Fax: (704) 687-6415
E-mail: zcai@uncc.edu
Home page: http://www.math.uncc.edu/~zcai

EDUCATION:

- 1995 Ph.D. in Statistics, University of California, Davis
- 1988 M.S. in Statistics, Zhejiang University, Hangzhou, China
- 1982 B.S. in Mathematics, China University of Geosciences, Wuhan, China

ACADEMIC and PROFESSIONAL POSITIONS:

- Adjunct Professor: Department of Economics, University of North Carolina at Charlotte, 2005 -
- Professor: Department of Mathematics & Statistics, University of North Carolina at Charlotte, 2005 -
- Associate Professor: Department of Mathematics & Statistics, University of North Carolina at Charlotte, 2002 - 2005
- Assistant Professor: Department of Mathematics & Statistics, University of North Carolina at Charlotte, 1998 - 2002
- Assistant Professor: Department of Mathematics, Missouri State University, 1995 - 1998
- Instructor, TA and RA: Department of Statistics, University of California, Davis, 1991 - 1995
- Lecturer: Department of Mathematics, Zhejiang University, China, 1988 - 1991
- Applied Statistician: Institute of Remote Sensing, China University of Geosciences, Wuhan, China, 1982 - 1985

- Guest Professor, School of Finance, Nanjing University of Economics and Finance, China, 2008 -
- "Minjiang Scholar" Adjunct Chair Professor in Economics, Xiamen University, China, 2007 -
- Guest Professor, College of Business, Shanghai Normal University, China, 2007 -
- Adjunct Professor, Wang Yanan Institute for Studies in Economics, Xiamen University, China, 2006 -
- Guest Professor, College of Economics, Zhejiang University, China, 2006 -
- Member of Scientific Committee, the Center for Statistical Research, Chinese Academy of Sciences, 2005 -
- Special-Term Professor, College of Economics and Management, Shanghai Jiaotong University, China, 2004 - 2006
- Guest Professor, China University of Geosciences, Wuhan, China, 2002 -
- Guest Professor, Qingdao University, China, 2002 -
- Visiting Professor, Humboldt University, Germany, Summer of 2002
- Visiting Professor, Litoral University, France, Summer of 1999

RESEARCH INTERESTS:

- Quantitative Finance
- Econometrics and Applied Econometrics in Labor Economics and Macroeconomics
- Mathematical Finance and Risk Management
- Nonlinear Time Series Modeling and Panel Data Analysis
- Nonparametric Curve Estimation and Tests
- Survival and Longitudinal Analysis with Applications in Economics and Finance

PUBLICATIONS:

◇ **Working Papers/Papers Under Progress:**

1. Functional coefficient stochastic volatility model. To be submitted (with Zhuo Zhong).

2. Testing for discontinuous diffusion models versus jump diffusion models. To be submitted (with Longqing Zhang).

3. Information effect for different firm-size – via the nonparametric jump-diffusion model. To be submitted (with Longqing Zhang).

4. Predictability of stock returns via a nonparametric model with nearly integrated variables. To be submitted (with J. Jiang and Y. Wang).

5. Semiparametric predictive regression models for stock returns. To be submitted (with J. Jiang and Y. Wang).

6. Additive return prediction models for stock returns. To be submitted (with J. Jiang and Y. Wang).

7. Instability of stock return predictability models. To be submitted (with Y. Wang).

8. Time-varying betas models: A nonparametric analysis. To be submitted

9. Selecting copulas in risk management. To be submitted (with X. Chen, Y. Fan and X. Wang).

10. Local quasi-likelihood method for generalized random curve models with longitudinal data. *Working paper*, Department of Mathematics and Statistics, University of North Carolina at Charlotte (2002) (with H. Wu).

⋄ **Papers Submitted and Revised and Forthcoming:**

11. Some recent developments in nonparametric finance. Submitted for publication (2008) (with Y. Hong)

12. Recent developments in nonparametric econometrics. Submitted for publication (2008) (with Q. Li).

13. Nonparametric regression models with integrated covariates. Submitted for publication (2008).

14. Panel estimation of weak instrumental variables models. Submitted for publication (2008) (with Y. Fang and H. Li).

15. Nonparametric pricing kernel: Estimation and testing. Submitted to *Journal of Econometrics* (2008) (with C.M. Kuan and L. Sun).

16. Quantile regression estimation in semiparametric dynamic models. Submitted to *Journal of Econometrics* (2008) (with Z. Xiao).

17. Consistent nonparametric test on parametric smooth coefficient model with nonstationary data. Submitted to *Journal of Econometrics* (2008) (with Q. Li and Y. Sun).

18. A semiparametric estimation of partially varying-coefficient instrumental variables models. Revised for *Econometric Journal* (2007) (with H. Xiong).

19. Convergency and divergency of functional coefficient weak instrumental variables models. Forthcoming in *Statistics and Its Interface* (2007) (with H. Li)

20. Functional-coefficient models for nonstationary time series data. Forthcoming in *Journal of Econometrics* (2007) (with Q. Li and J.Y. Park).

⋄ **Published Papers:**

21. Nonparametric quantile estimations for dynamic smooth coefficient models. *Journal of the American Statistical Association*, **103** (2008), xxx-xxx (with X. Xu).

22. Nonparametric methods for estimating conditional value-at-risk and expected shortfall. *Journal of Econometrics*, **146** (2008), xxx-xxx (with X. Wang).

23. Nonparametric estimation of varying coefficient dynamic panel models. *Econometric Theory*, **24** (2008), 1321-1342 (with Q. Li).

24. Trending time varying coefficient time series models with serially correlated errors. *Journal of Econometrics*, **137** (2007), 163-188.

25. Functional coefficient instrumental variables models. *Journal of Econometrics*, **133** (2006), 207-241 (with M. Das, H. Xiong and X. Wu).

26. Flexible seasonal time series models. *Advances in Econometrics*, **20B** (2006), 63-87 (with R. Chen).

27. Strong uniform consistency of nonparametric estimation of the censored conditional mode function. *Journal of Nonparametric Statistics*, **17** (2005), 797-806 (with E. Ould-Said).

28. Local quasi-likelihood approach to varying-coefficient discrete-valued time series models. *Journal of Nonparametric Statistics*, **15** (2003), 693-711.

29. Local M-estimator for nonparametric time series. *Statistics and Probability Letters*, **65** (2003), 433-449 (with E. Ould-Said).

30. Weighted local linear approach to censored nonparametric regression. In *Recent Advances and Trends in Nonparametric Statistics* (M.G. Akritas and D.M. Politis, eds.) (2003), 217-231.

31. Nonparametric methods in continuous-time finance: A selective review. In *Recent Advances and Trends in Nonparametric Statistics* (M.G. Akritas and D.M. Politis, eds.) (2003), 283-302 (with Y. Hong).

32. Nonparametric estimation equations for time series data. *Statistics and Probability Letters*, **62** (2003), 379-390.

33. Local linear estimation for time-dependent coefficients in Cox's regression models. *Scandinavian Journal of Statistics*, **30** (2003), 93-111 (with Y. Sun).

34. Adaptive varying-coefficient linear models. *Journal of the Royal Statistical Society, series B*, **65** (2003), 57-80 (with J. Fan and Q. Yao).

35. A two-stage approach to additive time series models. *Statistica Neerlandica*, **56** (2002), 415-433.

36. Two-step likelihood estimation procedure for varying-coefficient models. *Journal of Multivariate Analysis*, **82** (2002), 189-209.

37. Regression quantiles for time series data. *Econometric Theory*, **18** (2002), 169-192.

38. Estimating a distribution for censored time series data. *Journal of Multivariate Analysis*, **78** (2001), 299-318.

39. Smoothing for discrete-value time series. *Journal of the Royal Statistical Society, series B*, **63** (2001), 357-375 (with Q. Yao and W. Zhang).

40. Weighted Nadaraya-Watson regression estimation. *Statistics and Probability Letters*, **51** (2001), 307-318.

41. Local estimation of a biometric function with covariate effects. In *Asymptotics in Statistics and Probability* (M. Puri, ed) (2000) 47-70 (with L. Qian).

42. Average regression surface for dependent data. *Journal of Multivariate Analysis*, **75** (2000), 112-142 (with J. Fan).

43. Denoised least squares estimators: An application to estimating advertising effectiveness. *Statistica Sinica*, **10** (2000), 1231-1241 (with P.A. Naik and C.L. Tsai).

44. Functional-coefficient regression models for nonlinear time series. *Journal of the American Statistical Association*, **95** (2000), 941-956 (with J. Fan and Q. Yao).

45. Efficient estimation and inferences for varying-coefficient models. *Journal of the American Statistical Association*, **95** (2000), 888-902 (with J. Fan and R. Li).

46. Nonparametric estimation in nonlinear ARX time series models: Projection and linear fitting. *Econometric Theory*, **16** (2000), 465-501 (with E. Masry).

47. Application of a local linear autoregressive model to BOD time series. *Environmetrics*, **11** (2000), 341-350 (with R.C. Tiwari).

48. Berry-Esseen bounds for smooth estimate of a distribution function under association. *Journal of Nonparametric Statistics*, **11** (1999), 79-106 (with G.G. Roussas).

49. Weak convergence for smooth estimator of a distribution function under negative association. *Journal of Stochastic Analysis and Applications*, **17** (1999), 145-168 (with G.G. Roussas).

50. Diagnostics for nonlinearity in generalized linear models. *Journal of Statistical Computation and Simulation*, **29** (1999), 445-469 (with C.L. Tsai).

51. Kaplan-Meier estimator under association. *Journal of Multivariate Analysis*, **67** (1998), 318-348 (with G.G. Roussas).

52. Kernel density and hazard rate estimation for censored dependent data. *Journal of Multivariate Analysis*, **67** (1998), 23-34.

53. The examination of residual plots. *Statistica Sinica*, **8** (1998), 445-465 (with C.L. Tsai and X.Z. Wu).

54. Efficient estimation of a distribution function under quadrant dependence. *Scandinavian Journal of Statistics*, **25** (1998), 211-224 (with G.G. Roussas).

55. Asymptotic properties of Kaplan-Meier estimator for censored dependent data. *Statistics and Probability Letters*, **37** (1998), 381-389.

56. Score tests for heteroscedasticity in wavelet regression models. *Biometrika*, **85** (1998), 229-234 (with C.M. Hurvich and C.L.Tsai).

57. Smooth estimate of quantiles under association. *Statistics and Probability Letters*, **36** (1997), 275-287 (with G.G. Roussas).

58. *Statistical Inference under Dependence.* Ph.D. Dissertation (1995), Department of Statistics, University of California, Davis.

59. Strong consistency and rates for recursive nonparametric conditional probability density estimator under (α, β)-mixing conditions. *Stochastic Processes and Their Applications*, **38** (1991), 323-333.

60. Uniform strong estimation under α -mixing, with rates. *Statistics and Probability Letters,* **15** (1992), 47-55 (with G.G. Roussas).

61. Uniform strong convergence and rates for the kernel estimator of a distribution function and a regression function under weakly dependent observations. *Journal of Applied Probability and Statistics*, **9** (1993), 11-17.

62. Asymptotic normality of recursive kernel density estimator under dependent assumptions. *Journal of Applied Probability and Statistics*, **9** (1993), 123–129.

63. On complete convergence of nonparametric regression M-quantiles. *Journal of System Sciences and Mathematics*, **5** (1992), 227–232.

64. Moderate deviations and large deviations for generalized L-statistics. *The Annals of Chinese Mathematics*, **13A** (1992), 364-372.

65. Some remarks on the strong convergence of weighted sums for independent random variables. *Applied Mathematical Journal of University*, **6** (1991), 44-51.

66. Strong consistency and rates for estimator of probability density for weakly dependent random variables. *Journal of System Sciences and Mathematics*, **10** (1990), 360-370.

67. Rate of convergence in the SLLN for dependent random variables. *Journal of Applied Probability and Statistics*, **5** (1989), 256-264.

68. Central limit theorem for integrated square error of double kernel estimator of conditional density. *Journal of Hangzhou University,* **16** (1989), 123-131.

69. Strong approximation and Erdös-Rènyi type laws of sum for independently but nonidentically random variables. *Journal of Hangzhou University*, **19** (1992), 240-246.

70. On Chernoff-type large deviations for trimmed U-statistics. *Journal of Hangzhou University*, **18** (1991), 21-26.

71. Convergence properties for stochastic measures of the accuracy of double kernel estimator of conditional probability density. *Journal of Hangzhou University*, **18** (1991), 390-401.

72. A strong law for linear functions of order statistics under dependent assumptions. *Journal of Hangzhou University*, **15** (1988), 378-383.

ACADEMIC GRANTS and HONORS:

• NSF Grant for the proposal "Nonlinear and Nonstationary Time Series Modeling with Its Applications", 2004-2007, #DMS-0404954
• NSF Grant for the proposal "Nonparametric Time Series Modeling", 2000-2003, extended to 2004, #DMS-0072400

• Faculty Research Grant of University of North Carolina at Charlotte, 2006
• Reassignment of Duties Grant of University of North Carolina at Charlotte, Spring 2004
• Faculty Research Grant of University of North Carolina at Charlotte, 2003
• Faculty Research Grant of University of North Carolina at Charlotte, 2002
• Faculty Research Grant II of University of North Carolina at Charlotte, 2001

• Faculty Research Grant I of University of North Carolina at Charlotte, 2001
• Faculty Research Grant of University of North Carolina at Charlotte, 2000
• Faculty Research Grant of University of North Carolina at Charlotte, 1999
• Faculty Research Grant of Southwest Missouri State University, 1998
• Julius R. Blum Memorial Award to the outstanding graduate students, UC-Davis, 1992
• Second Award for Excellent Achievements in Research by Zhejiang Province, China, 1991
• NSF Grant of Zhejiang Province, China, 1990

INVITED COLLOQUIUM TALKS, LECTURES, and CONFERENCE PRESENTATIONS:

• Department of Economics, State University of Nw York at Binghamton, 2008
• Department of Economics, Texas A& University, 2008
• Department of Economics, Rochester University, 2008
• Department of Economics, East Carolina University, 2008
• Center for Economic Research, Shandong University, 2008
• College of Economics and Management, Beihang University, 2008
• Institute of Economics, Academia Sinica, Tauwan, 2008
• College of Economics and Management, Shanghai Maritime University, 2008
• Guanghua School of Management, Beijing University, 2008
• School of Finance, Nanjing University of Finance and Economics, 2008
• Department of Economics, Indiana University, 2008
• College of Mathematics, Xiamen University, 2008
• College of Mathematics, Shandong University, 2008
• College of Statistics and Mathematics, Shandong Economics University, 2008
• Department of Statistics, Indiana University, 2008
• Department of Mathematics, Georgia Institute of Technology, 2008
• School of Finance, Nanjing University of Finance and Economics, 2007
• College of Economics and Management, Shanghai Maritime University, 2007
• College of Business, Shanghai Normal University, 2007
• Center for Econometrics, Shanghai Academy of Social Sciences, 2007
• Department of Forest Economics, Swedish University of Agricultural Sciences, 2007
• School of Management, Fudan University, 2007
• School of Economics, Fudan University, 2007
• College of Economics, China University of Geosciences, 2007
• College of Economics, Huazhong Sciences and Technology University, 2007
• College of Economics and Management, Shandong Sciences and Technology University, 2007
• College of Economics and Management, Beihang University, 2007
• College of Economics and Management, Fujian Agriculture and Forestry University, 2007
• School of Economics, Singapore Management University, 2007
• College of Mathematics, Qingdao University, 2007
• Department of Statistics, University of North Carolina at Chapel Hill, 2007
• Department of Mathematics, Georgia Institute of Technology, 2007
• Department of Statistics, University of Chicago, 2007
• Wang Yanan Institute for Studies in Economics, Xiamen University, 2006
• Center for Financial Engineering, Shanghai Institute of Finance, 2006
• College of Business, Shanghai Normal University, 2006
• Center for Financial Engineering, Shandong University, 2006
• College of Statistics and Insurance, Shandong Economics University, 2006

- College of Economics, Qingdao University, 2006
- Department of Economics, Vanderbilt University, 2006
- Center for Advanced Mathematics, Nanjing University, 2006
- College of Mathematics, Qingdao University, 2006
- College of Mathematics, Shandong University, 2006
- Department of Mathematics, Southeast University, 2006
- Department of Statistics, Iowa State University, 2006
- Academy of Mathematics and Systems Science, Chinese Academy of Science, 2006
- Wang Yanan Institute for Studies in Economics, Xiamen University, 2005
- Department of Economics, New York University, 2005
- College of Economics, Xiamen University, 2005 (a series of lectures)
- School of Management, Shanghai Jiaotong University, 2005
- College of Economics, Zhejiang University, 2005
- Department of Mathematics, Zhejiang University, 2005
- Department of Mathematics, Southeast University, 2005
- College of Economics, Shanghai University of Finance and Economics, 2004
- School of Management, Fudan University, 2004
- Department of Economics, Columbia University, 2004
- Department of Economics, Syracuse University, 2004
- Academy of Mathematics and Systems Science, Chinese Academy of Science, 2004
- School of Statistics, Remin University, China, 2004
- Department of Mathematics, Qingdao University, 2004
- Department of Mathematics, Zhejinag University, 2004
- Institute of Economics, Academia Sinica, 2003
- College of Economics, Zhejinag University, 2003
- College of Economics, China University of Geosciences, 2003
- Graduate School of Business, University of Chicago, 2003
- Guanghua School of Management, Beijing University, 2002
- School of Management, Syracuse University, 2002
- Department of Economics, Cornell University, 2002
- Department of Statistics, Pennsylvania State University, 2002
- Department of Mathematics, Qingdao University, 2002
- Department of Mathematics, China University of Geosciences, 2002
- Department of Statistics, North Carolina State University, 2002
- Department of Biostatistics, Rochester University, 2002
- Department of Statistics, University of Illinois at Champaign, 2001
- Department of Statistics, University of South Carolina at Columbia, 2000
- Department of Mathematics, Littoral University, France, 1999
- Department of Mathematics, University of North Carolina at Charlotte, 1998
- Department of Mathematics, Indiana University & Purdue University, 1998
- Department of Statistics, University of Missouri at Columbia, 1998
- Department of Mathematics, University of Maine, 1997
- Department of Statistics, University of California at Davis, 1995
- Department of Mathematics, Southwest Missouri State University, 1995

- Invited presentations to many international and domestic conferences, meetings, and workshops

PROFESSIONAL ACTIVITIES:

- Co-chair of the organizing committee of the international conference "Nonlinear Time Series with Applications in Macroeconomics and Finance" in Xiamen, China, May 2008
- Co-chair of the organizing committee of the international conference "XMU-HUB

Workshop in Economics and Finance" in Xiamen, China, April 2008
• Co-chair of the organizing committee of the international conference "Sino-Korean Econometrics Workshop" in Xiamen, China, December 2007
• Co-chair of the organizing committee of the international conference "The 14th International Conference on Panel Data" in Xiamen, China, July 2007
• Co-chair of the organizing committee of the international conference "Financial Engineering and Risk Management" in Xiamen, China, June 2006
• Co-chair of the organizing committee of the international conference "Financial Engineering and Risk Management" in Shanghai, China, June 2005
• Co-Chair of the organizing committee of the international symposium "New Frontiers of Statistics" in Beijing, July 2005
• Chair of the Local Committee for ENAR/IMS Meeting in March, 2001 at Charlotte, NC
• Member of the Screening Panel of the Statistics Program of the National Sciences Foundation, December, 2004

• Member of the American Statistical Association (ASA)
• Member of the Institute of Mathematical Statistics (IMS)
• Member of the International Econometrics Society
• Member of the International Chinese Statistical Association (ICSA)

• Reviewer for the National Sciences Foundation grant proposals
• Reviewer for the Social Sciences and Humanities Research Council of Canada (SSHRC)
• Referee for the following international journals:

Econometrica
Journal of Econometrics
Econometric Theory
Quantitative Finance
Econometrics Journal
Econometrics Reviews
Economics Letters
Journal of Business and Economic Statistics
Journal of Applied Econometrics
Finance Research Letters

Journal of the American Statistical Association
Journal of the Royal Statistical Society, Series B
The Annals of Statistics
Technometrics
IEEE Transactions on Information Theory
Biometrics
Journal of Multivariate Analysis
Journal of Time Series Analysis
Scandinavian Journal of Statistics
Naval Research Logistics
Statistica Sinica
Computational Statistics
Journal of Statistical Planning and Inference
Communications in Statistics
Journal of Nonparametric Statistics
Statistics and Probability Letters
Computational Statistics and Data Analysis
Statistical Inference for Stochastic Processes

Computers and Mathematics with Applications
Mathematical Sciences Research Hot-Line

Ph.D. Students Supervision:

- Huaiyu Xiong, “Semiparametric Instrument Variable Models”, December, 2004.
- Xiaoping Xu, “Semi/Non-parametric Dynamic Quantile Regression Models”, May 2005.
- Henong Li, “Semi/Non-parametric Weak Instrument Variable Models”, December, 2006.
- Xian Wang, “Selection of Copulas and Its Applications”, August, 2008.
- Yunfei Wang, ”Predictive Regression Models for Stock Returns”, 2008.
- Linman Sun,
- Li Wu,