Dong LI

Contact Information

Center for Statistical Science
Weiqing Bldg. 203B
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Research Interests

Financial econometrics, Nonlinear time series with applications,
Social network and big data.

Working experience

(tenured) Associate Professor, Tsinghua University, 01/2020 - present.

Associate Professor, Tsinghua University, 12/2016 - 12/2019.

Assistant Professor, Tsinghua University, 09/2013 - 12/2016.

Education

Ph.D., Hong Kong University of Science and Technology, 12/2010

- Major in Statistics
- Thesis Topic: *Statistical Inference for Some Threshold Models*
- Adviser: Professor Shiqing Ling

M.S., Academy of Mathematics and Systems Science, CAS, 07/2005

B.S., Qufu Normal University, 07/2002

Research Experience

Post-doc Fellow 02/2011 - 07/2011
Department of Mathematics, HKUST

Post-doc Fellow 08/2011 - 02/2013
Department of Statistics & Actuarial Science , University of Iowa

Visit

Research Assistant 09/2005 - 05/2006
Department of Mathematics, HKUST

Visiting scholar 05/2012
Department of Statistics, LSE

Visiting scholar 02/2013 - 08/2013
Department of Mathematics, HKUST

Visiting scholar 10/2015 - 10/2015
Department of Mathematics, HKUST

Research Associate 07/2017 - 08/2017
Department of Statistics and Actuarial Science, HKU

Research Associate 07/2018 - 08/2018
Department of Statistics and Actuarial Science, HKU

Research Associate 07/2019 - 08/2019
Department of Statistics and Actuarial Science, HKU

Selected Publications

Jiang, F., **Li, D.** and Zhu, K. (2020). Inference for augmented double autoregressive models with null volatility coefficients. *Journal of Econometrics* **215**, 165-183.

Guo, S., **Li, D.** and Li, M. (2019). Strict stationarity testing and GLAD estimation of double autoregressive models. *Journal of Econometrics* **211**, 319–337.

Li, D., Zhang, X.F., Zhu, K. and Ling, S. (2018). The ZD-GARCH model: A new way to study heteroscedasticity. *Journal of Econometrics* **202**, 1–17.

Li, D. and Wu, W.Q. (2018). Renorming volatilities in a family of GARCH models. *Econometric Theory* **34**, 1370–1382.

Li, D., Ling, S. and Zhang, R. M. (2016). On a threshold double autoregressive model. *Journal of Business & Economic Statistics* **34**, 68–80.

Li, D., Ling, S. and Zakoïan, J.-M.(2015). Asymptotic inference in multiple-threshold double autoregressive models. *Journal of Econometrics* **189**, 415–427.

Li, D., Ling, S. and Li, W.K. (2013). Asymptotic theory on the least squares estimation of threshold moving-average models. *Econometric Theory* **29**, 482-516.

Li, D. and Ling, S. (2012). On the least squares estimation of multiple-regime threshold autoregressive models. *Journal of Econometrics* **167**, 240-253.

Ling, S. and **Li, D.** (2008). Asymptotic inference for a nonstationary double AR(1) model. *Biometrika* **95**, 257-263.

All Publications (30, including accepted papers)

Zhou, J., **Li, D.***, Pan, R. and Wang, H.S. (2020). Network GARCH model. *Statistica Sinica.*

Gong, H. and **Li, D.*** (2020). On the three-step non-Gaussian quasi-maximum likelihood estimation of heavy-tailed double AR models. *Journal of Time Series Analysis.*

Li, D.*, Li, M. and Zeng, L. (2020). Simulation and application of subsampling for threshold autoregressive moving-average models. *Communications in Statistics: Simulation and Computation.*

Li, D. and Tong, H. (2020). On an absolute autoregressive model and skew symmetric distributions. *Statistica* **80**.

Jiang, F., **Li, D.** and Zhu, K. (2020). Inference for augmented double autoregressive models with null volatility coefficients. *Journal of Econometrics* **215**, 165-183.

Li, D. and Qiu, J.M. (2020). The marginal density of a TMA(1) process. *Journal of Time Series Analysis* **41**, 476-484.

Yang, Y. and **Li, D.*** (2020). Self-weighted LAD-based inference for heavy-tailed continuous threshold autoregressive models. *Journal of Time Series Analysis* **41**, 163-172.

Li, D. and Zhu, K. (2020). Inference for asymmetric exponentially weighted moving average models. *Journal of Time Series Analysis* **41**, 154-162.

Li, D., Ling, S., Tong, H. and Yang, G.R. (2019). On Brownian motion approximation of compound Poisson processes with applications to threshold models. *Advances in Decision Sciences* **23**(2) (27 pages).

Guo, S., **Li, D.** and Li, M. (2019). Strict stationarity testing and GLAD estimation of double autoregressive models. *Journal of Econometrics* **211**, 319–337.

Li, D., Guo, S. and Zhu, K. (2019). Double AR model without intercept: An alternative to modeling nonstationarity and heteroscedasticity. *Econometric Reviews* **38**, 319–331.

Li, D. and Wu, W.Q. (2018). Renorming volatilities in a family of GARCH models. *Econometric Theory* **34**, 1370–1382.

Liu, F., **Li, D.*** and Kang, X.M. (2018). Sample path properties of an explosive double autoregressive model. *Econometric Reviews* **37**, 484–490.

Li, D., Zhang, X.F., Zhu, K. and Ling, S. (2018). The ZD-GARCH model: A new way to study heteroscedasticity. *Journal of Econometrics* **202**, 1–17.

Li, D. and Tong, H. (2016). Nested sub-sample search algorithm for estimation of threshold models. *Statistica Sinica* **26**, 1543–1554.

Li, D., Ling, S. and Zhang, R. M. (2016). On a threshold double autoregressive model. *Journal of Business & Economic Statistics* **34**, 68–80.

Li, D., Ling, S. and Zakoïan, J.-M.(2015). Asymptotic inference in multiple-threshold double autoregressive models. *Journal of Econometrics* **189**, 415–427.

Li, D., Li, M. and Wu, W. (2014). On dynamics of volatilities in nonstationary GARCH models. *Statistics & Probability Letters* **94**, 86–90.

Chen, M., **Li, D.*** and Ling, S. (2014). Nonstationarity and quasi-maximum likelihood estimation on a double autoregressive model. *Journal of Time Series Analysis* **35**, 189–202.

Chan, K.S., **Li, D.**, Ling, S. and Tong, H. (2014). On conditionally heteroscedastic AR models with thresholds. *Statistica Sinica* **24**, 625–652.

Li, D. (2014). Weak convergence of the sequential empirical processes of residuals in TAR models. *Science China: Mathematics* **57**, 173–180.

Li, D., Chan, K.S. and Schiling, K.E. (2013). Nitrate concentration trends in Iowa's rivers, 1998 to 2012: What challenges await nutrient reduction initiatives? *Journal of Environmental Quality* **42**, 1822–1828.

Li, D., Ling, S. and Li, W.K. (2013). Asymptotic theory on the least squares estimation of threshold moving-average models. *Econometric Theory* **29**, 482-516.

Wu,W.Q., **Li, D.**, Pan, S. and Chen, M. (2013). Three-regime mean reversion, TAR and its applications. *Systems Engineering - Theory & Practice* **33**, 901-909.

Li, D. and Ling, S. (2012). On the least squares estimation of multiple-regime threshold autoregressive models. *Journal of Econometrics* **167**, 240-253.

Li, D. (2012). A note on moving-average models with feedback. *Journal of Time Series Analysis* **33**, 873-879.

Li, D., Ling, S. and Tong, H. (2012). On moving-average models with feedback. *Bernoulli* **18**, 735-745.

Li, D., Li, W.K. and Ling, S. (2011). On the least squares estimation of threshold ARMA models. *Statistics and its Interface* **4**, 183-196.

Ling, S. and **Li, D.** (2008). Asymptotic inference for a nonstationary double AR(1) model. *Biometrika* **95**, 257-263.

Ling, S., Tong, H. and **Li, D.** (2007). Ergodicity and invertibility of threshold moving-average models. *Bernoulli* **13**, 161-168.

SUBMITTED PAPERS

Li, D. (2020). Quasi-maximum likelihood estimation in a simple nonlinear random-coefficient autoregressive model.

Jiang, F., **Li, D.**, Li, W.K. and Zhu, K. (2020). Testing and modelling for the structural change in covariance matrix time series with multiplicative form.

Jiang, F., **Li, D.** and Zhu, K. (2020). Adaptive inference for a semiparametric GARCH model.

Zhang, X., **Li, D.** and Tong, H. (2020). On the least squares estimation of 2-threshold-variable autoregressive models.

Sun, L. and **Li, D.**(2020). Change-point detection for expected shortfall in time series.

Li, D. (2020). Smooth transition moving-average models: estimation and testing.

Teaching

Courses taught:

- Multivariate Statistical Analysis (2014,2015/Spring)(G level)
- Advanced Mathematical Statistics (2014, 2015/Fall)(G level)
- Cases and Statistical Studies (2014, 2015/Fall, with other 4 instructors)(G level)
- Probability (2014/Summer)(U/G level)
- Probability and Statistics (2015/Summer)(U/G level)
- Elementary Probability (2016/Fall)(U/G level for minor degree)
- Advanced Probability I (2016-2019/Fall)(PhD level)
- Time Series Analysis (2017/Spring)(PhD level)
- Applied Time Series Analysis (2017, 2018, 2020/Spring)(U/G level)
- Financial Statistics (2017/Fall; 2019/Spring)(U/G level)
- Introduction to Statistics (2018/Fall, 2020/Spring)(liberal course)

Service

- *Council member of Beijing Applied Statistic Association* (2015-2019)
- *Council member of Statistical Computing Association* (2017-2021)
- *Deputy Secretary-General of Chinese Society of Probability and Statistics* (2019-2023)
- *Executive member of the council of Research and Teaching Association of Chinese Industrial Statistics* (2018-2022)
- *Executive member of the council of Young Statistician Association in Research and Teaching Association of Chinese Industrial Statistics* (2019-2023)

Fund

- Statistical inference and applications of nonlinear and nonstationary time series models with exogenous covariates, National Natural Science Foundation of China (No.71973077), RMB¥480,000, Period: 01/2020 - 12/2023, **PI**.
- Network-based analysis of high-dimensional time series, National Natural Science Foundation of China (No.11771239), RMB¥480,000, Period: 01/2018 - 12/2021, **PI**.
- A unified theory on estimation in threshold time series models, Tsinghua University Initiative Scientific Research Program (2019Z07L01009), RMB¥540,000, Period: 01/2019 - 12/2020, **PI**.
- Key techniques in risk assessment on food contamination, Ministry of Science and Technology of the P.R. China, RMB¥500,000, Period: 12/2018 - 12/2021, **Co-PI**.
- A study on some hypothesis testing problems in time series analysis, National Natural Science Foundation of China (No.11571348), RMB ¥30,000, Period: 01/2016 - 12/2019, **Co-PI**.
- Conditional heteroscedastic models with stable innovations: statistical inference and their applications, National Natural Science Foundation of China (No. 11401337), RMB¥220,000, Period: 01/2015 - 12/2017, **PI**.

Organizing Conference

- Co-organizer, the international conference on *Complex Time Series Modelling and Forecasting: Dynamic Network, Spatio-temporal Data and Functional Processes*, Jan. 8-12, 2018. (with Prof. Marc Genton, Eric Kolaczyk, and Qiwei Yao)
- Co-organizer, the international conference on *Time Series Econometrics*, Dec. 18-20, 2015. (with Prof. Shiqing Ling and Chuanzhong Chen)
- Co-organizer, 2016 Tsinghua Symposium on Statistics and Data Science for Young Scholars, Dec. 9-11, 2016. (with Dr. Ke Deng and Lin Hou)
- Organizer, Mini workshop on Big Data and Internet Finance, Dec. 18, 2016.

Journal Reviewing

- *Applied Stochastic Models in Business and Industry*
- *Annals of Statistics*
- *Biometrika*
- *Colombian Journal of Statistics*
- *Communications in Statistics - Simulation and Computation*
- *Computational Statistics & Data Analysis*
- *European Journal of Industrial Engineering*
- *Econometric Theory*
- *Journal of Econometrics*
- *Journal of the Korean Statistical Society*
- *Journal of Risk and Financial Management*
- *Metrika*
- *Statistica Sinica*
- *Stochastic Environmental Research and Risk Assessment*
- *Statistics & Probability Letters*
- *Test*

(Invited) Talks in Conferences and Seminars

The 2nd International Conference on Econometrics and Statistics (ECOSTA 2018), City University of Hong Kong, 19-21/06/2018.

The international conference on Complex Time Series Modelling and Forecasting: Dynamic Network, Spatio-temporal Data and Functional Processes, Jan. 8-12, 2018.

The 1st International Conference on Econometrics and Statistics (ECOSTA 2017), HKUST, 15-17/06/2017.

The 2017 Symposium on Modern Statistics at Xiamen University, 8-10/12/2017.

2017 ICCM, Sun Yat-sen University, 27-30/12/2017 (45min invited talk).

The 2016 Symposium on Modern Statistics at Xiamen University, 24-25/12/2016.

Statistics with Applications for Young Scholars at Capital Normal University, Beijing, 2-4/12/2016.

Symposium on Statistics for Young Scholars at Nankai University, Tianjin, 11-13/11/2016.

The Third Guanghua Time Series Forum, Peking University at Xi'an, 1-5/08/2016.

The Third Taihu International Statistics Forum, Shanghai, 9-11/07/2016.

The 2015 Symposium on Modern Statistics at Xiamen University, 25-27/12/2015.

The international workshop on Time Series Econometrics at Tsinghua-Sanya Mathematical Forum, 18-20/12/2015.

The Second Guanghua Time Series Forum, Peking University at Xi'an, 2-7/08/2015.

The 5th IMA-China International Conference on Statistics and Probability, Yunnan University, 1-3/07/2015.

2015 Tsinghua Summer Workshop on Modern Statistics, Tsinghua University, 22-26/06/2015.

The First Colloquium on Statistical Science For Young Researchers, SJTU, 19-21/06/2015.

Workshop on applied statistics, Jilin University, 9-12/01/2015.

Big Data: Opportunities, Challenges and Innovations, Tsinghua Sanya International Mathematics Forum, 27-30/12/2014.

The First Guanghua Time Series Forum at Peking University, 18-22/08/2014.

The 7th Financial Engineering and Risk Management International Symposium, 27-28/06/2014, Central University of Finance and Economics, China.

The workshop on Chinese statistics, 22-24/11/2013, Chinese Academy of Sciences.

An International Conference in Honour of Professor W.K. Li at HKUST—Frontiers of Time Series Analysis and Related Fields, 26-27/07/2013.

National University of Singapore, 29/02/2012.

Business School, Monash University, Australia, 25/02/2011.

Recent Advances in Nonlinear Time Series Analysis, the Institute of Mathematical Science, National University of Singapore, 7-18/02/2011.

School of Business, Remin University of China, 29/06/2010.

Proceedings of the Sixth Chinese Symposium on *Limit Theory in Probability And Large Sample Theory in Statistics*, Luoyang, Henan Province, China, 7-9/11/2009.