Joshua Chan

Contact Information

Economics Discipline Group
University of Technology Sydney
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Research Interests

nonlinear state space models, Bayesian model comparison, inflation modeling, output gap estimation

Education

University of Queensland, Australia
Ph.D., Statistics (July 2010)
Thesis: Advanced Monte Carlo Methods with Applications in Finance

University of California, Irvine, USA
M.S., Mathematics (June 2007)

University of Macau, People's Republic of China
B.A., Economics, graduated with first class honors (June 2002)

Current Position

University of Technology Sydney, Australia
Professor — **since 2017**

Positions Held

Australian National University, Australia

Associate Professor	**2016**
Senior Lecturer	**2013–2015**
Lecturer	**2011–2013**
Postdoctoral Fellow	**2010–2011**

University of Queensland, Australia
Postdoctoral Fellow — **2010**

Visiting Positions

Purdue University, USA
Visiting Professor — **October–November, 2016**

Publications

Book

- Kroese, D.P. and Chan, J.C.C. (2014). **Statistical Modeling and Computation**, Springer.

Refereed Journals (ABDC Ranking: 18 A* and 10 A)

1. Chan, J.C.C. and Song, Y. (2017). Measuring Inflation Expectations Uncertainty Using High-Frequency Data, **Journal of Money, Credit and Banking**, forthcoming

2. Chan, J.C.C. and Eisenstat, E. (2017). Bayesian Model Comparison for Time-Varying Parameter VARs with Stochastic Volatility, **Journal of Applied Econometrics**, forthcoming

3. Chan, J.C.C., Clark, T. and Koop, G. (2017). A New Model of Inflation, Trend Inflation, and Long-Run Inflation Expectations, **Journal of Money, Credit and Banking**, forthcoming

4. Chan, J.C.C., Leon-Gonzalez, R. and Strachan, R.W. (2017). Invariant Inference and Efficient Computation in the Static Factor Model, **Journal of the American Statistical Association**, forthcoming

5. Chan, J.C.C. (2017). Specification Tests for Time-Varying Parameter Models with Stochastic Volatility, **Econometric Reviews**, forthcoming

6. Chan, J.C.C. and Eisenstat, E. (2017). Efficient Estimation of Bayesian VARMAs with Time-Varying Coefficients, **Journal of Applied Econometrics**, 32(7), 1277-1297

7. Chan, J.C.C., Henderson, D.J., Parmeter, C.F. and Tobias, J.L. (2017). Nonparametric Estimation in Economics: Bayesian and Frequentist Approaches, **WIREs Computational Statistics**, 9(6), e1406

8. Grant, A.L. and Chan, J.C.C. (2017). A Bayesian Model Comparison for Trend-Cycle Decompositions of Output, **Journal of Money, Credit and Banking**, 49(2-3): 525-552

9. Grant, A.L. and Chan, J.C.C. (2017). Reconciling Output Gaps: Unobserved Components Model and Hodrick-Prescott Filter, **Journal of Economic Dynamics and Control**, 75, 114-121

10. Chan, J.C.C. (2017). The Stochastic Volatility in Mean Model with Time-Varying Parameters: An Application to Inflation Modeling, **Journal of Business and Economic Statistics**, 35(1), 17-28

11. Chan, J.C.C., Eisenstat, E. and Koop, G. (2016). Large Bayesian VARMAs, **Journal of Econometrics**, 192(2), 374-390

12. Chan, J.C.C. and Grant, A.L. (2016). On the Observed-Data Deviance Information Criterion for Volatility Modeling, **Journal of Financial Econometrics**, 14(4), 772-802

13. Eisenstat, E., Chan, J.C.C. and Strachan, R.W. (2016). Stochastic Model Specification Search for Time-Varying Parameter VARs, **Econometric Reviews**, 35(8-10), 1638-1665

14. Chan, J.C.C. and Grant, A.L. (2016). Fast Computation of the Deviance Information Criterion for Latent Variable Models, **Computational Statistics and Data Analysis**, 100, 847-859

15. Chan, J.C.C., Koop, G. and Potter, S.M. (2016). A Bounded Model of Time Variation in Trend Inflation, NAIRU and the Phillips Curve, **Journal of Applied Econometrics**, 31(3), 551–565

16. Chan, J.C.C. and Grant, A.L. (2016). Modeling Energy Price Dynamics: GARCH versus Stochastic Volatility, **Energy Economics**, 54, 182-189

17. Chan, J.C.C. and Tobias, J.L. (2015). Priors and Posterior Computation in Linear Endogenous Variables Models with Imperfect Instruments, **Journal of Applied Econometrics**, 30(4), 650-674

18. Chan, J.C.C. and Grant, A.L. (2015). Pitfalls of Estimating the Marginal Likelihood Using the Modified Harmonic Mean, **Economics Letters**, 131, 29-33

19. Chan, J.C.C. and Eisenstat, E. (2015). Marginal Likelihood Estimation with the Cross-Entropy Method, **Econometric Reviews**, 34(3), 256-285

20. Chan, J.C.C. and Koop, G. (2014). Modelling Breaks and Clusters in the Steady States of Macroeconomic Variables, **Computational Statistics and Data Analysis**, 76, 186-193

21. Chan, J.C.C. (2013). Moving Average Stochastic Volatility Models with Application to Inflation Forecast, **Journal of Econometrics**, 176(2), 162-172

22. Chan, J.C.C., Koop, G. and Potter, S.M. (2013). A New Model of Trend Inflation, **Journal of Business and Economic Statistics**, 31(1), 94-106
23. Chan, J.C.C., Koop, G., Leon-Gonzalez, R. and Strachan, R.W. (2012). Time Varying Dimension Models, **Journal of Business and Economic Statistics**, 30(3), 358-367
24. Chan, J.C.C. and Kroese, D.P. (2012). Improved Cross-Entropy Method for Estimation, **Statistics and Computing**, 22(5), 1031-1040
25. Chan, J.C.C., Glynn, P.W. and Kroese, D.P. (2011). A Comparison of Cross-Entropy and Variance Minimization Strategies, **Journal of Applied Probability**, 48A, 183-194
26. Chan, J.C.C. and Kroese, D.P. (2011). Rare-event Probability Estimation with Conditional Monte Carlo, **Annals of Operations Research**, 189, 43-61
27. Chan, J.C.C. and Kroese, D.P. (2010). Efficient Estimation of Large Portfolio Loss Probabilities in t-copula Models, **European Journal of Operational Research**, 205, 361-367
28. Chan, J.C.C. and Jeliazkov, I. (2009). MCMC Estimation of Restricted Covariance Matrix, **Journal of Computational and Graphical Statistics**, 18, 457–480
29. Chan, J.C.C. and Jeliazkov, I. (2009). Efficient Simulation and Integrated Likelihood Estimation in State Space Models, **International Journal of Mathematical Modelling and Numerical Optimisation**, 1, 101-120
30. Chan, J.C.C. (2005). Replication of the Results in 'Learning about Heterogeneity in Returns to Schooling,' **Journal of Applied Econometrics**, 20, 439–443

Book Chapters

31. Chan, J.C.C. and Hsiao, C.Y.L (2014). Estimation of Stochastic Volatility Models with Heavy Tails and Serial Dependence. In: I. Jeliazkov and X.S. Yang (Eds.), **Bayesian Inference in the Social Sciences**, 159-180, John Wiley & Sons
32. Brereton, T.J., Chan, J.C.C. and Kroese, D.P. (2013). Monte Carlo Methods for Portfolio Credit Risk. In: H. Scheule and D. Rosch (Eds.), **Credit Portfolio Securitizations and Derivatives**, 127-152, John Wiley & Sons

Refereed Conference Proceedings

33. Brereton, T.J., Chan, J.C.C. and Kroese, D.P. (2011). Fitting Mixture Importance Sampling Distributions via Improved Cross-Entropy, **Proceedings of the 2011 Winter Simulation Conference**, Jain, S., Creasey, R.R., Himmelspach, J., White, K.P., and Fu, M. eds., Phoenix, USA, 422–428
34. Chan, J.C.C. and Kroese, D.P. (2008). Randomized Methods for Solving the Winner Determination Problem in Combinatorial Auctions, **Proceedings of the 2008 Winter Simulation Conference**, Mason, S., Hill, R., Rose, O. and Mounch, L. eds., Miami, USA, 1344–1349

Recent Research

Working Papers

- Composite Likelihood Methods for Large Bayesian VARs with Stochastic Volatility (with Eric Eisenstat, Chenghan Hou and Gary Koop)
- Asymptotic Trimming for Importance Sampling Estimators with Infinite Variance (with Chenghan Hou and Thomas Yang)

- Measuring the Output Gap Using Stochastic Model Specification Search (with Angelia Grant)
- A New Approach to Identifying Noise Shocks (with Luca Benati, Eric Eisenstat and Gary Koop)
- Large Bayesian VARs: A Flexible Kronecker Error Covariance Structure
- The Zero Lower Bound: Implications for Modelling the Interest Rate (with Rodney Strachan)
- A Regime Switching Skew-normal Model of Contagion (with Renée Fry-McKibbin and Cody Hsiao)

Grants

External Grants
- Discovery Project, The Australian Research Council, "Large dynamic time-varying models for structural macroeconomic inference", 2018-2020, $179,472, Rodney Strachan, Joshua Chan and Eric Eisenstat
- Discovery Project, The Australian Research Council, "Measuring inflation expectations and inflation expectations uncertainty", 2017-2019, $283,000, sole investigator
- Discovery Early Career Researcher Award, The Australian Research Council, "New approaches to estimating nonlinear time-varying macroeconometric models", 2015-2017, $365,000

Internal Grants
- Research School Grant, CBE, ANU, "Measuring inflation expectations and inflation expectations uncertainty", 2015-2016, $14,818
- Research School Grant, CBE, ANU, "Bayesian Shrinkage Methods for Time-varying Parameter Vector Autogressions", 2014-2015, $9,259
- Research School Grant, CBE, ANU, "New Approaches to Estimating Nonlinear Time-varying Models with Macroeconomic Applications", 2013-2014, $10,000
- Research School Grant, CBE, ANU, "New Parsimonious Approaches for Modelling and Forecasting with Highly Flexible Vector Autoregressions", 2012-2013, $7,049
- Research School Grant, CBE, ANU, "Estimation in Non-linear State-space Models Using Precision-based Methods", 2011-2012, $8,300

Research Supervision

Postdoctoral Fellow
- Angelia Grant, UTS, since 2017

Ph.D. Students (placement)
- Bowen Fu, panel chair, current
- Minh Ngoc Nguyen, panel member, current
- Guanlong Ren, panel member, current
- Qingyin Ma, panel member, current
- Beili Zhu, panel member, current
- Bo Zhang, panel member, current
- Jamie Cross, panel member, ANU, 2017
- Aubrey Poon, panel chair, ANU, 2017 (postdoctoral fellow, University of Strathclyde)
- Chenghan Hou, panel chair, ANU, 2017 (assistant professor, Hunan University)
- Luis Uzeda, panel member, ANU, 2017 (Bank of Canada)
- Wee Koh, panel member, ANU, 2017 (Centre for Strategic and Policy Studies)
- Cody Yu-Ling Hsiao, panel member, ANU, 2014 (postdoctoral fellow, UNSW)

Teaching Experience

University of Technology Sydney, Australia **since 2017**
- Econometrics I (first econometrics course in the PhD sequence)

Purdue University, USA **2016**

- Bayesian Econometrics (second-year PhD econometrics course)

Australian National University, Australia **2011-2016**

- Business & Economic Forecasting (third-year/postgraduate econometrics course)
- Econometric Theory (second econometrics course in the PhD sequence)

University of Queensland, Australia **2009–2010**

- Mathematical Statistics (core third-year mathematical statistics course)

Short Courses

- *Non-Parametric Bayesian Models for Big Data and Macro/Finance*, 5-day workshop at SIDE Summer School of Econometrics, Italy, 2017
- *Bayesian Time Series Econometrics*, 2-day workshop at ANU, Australia, 2013

Service

Faculty Service

- Member of Master of Business Analytics Working Group, UTS, 2017
  Responsible for developing a new Master of Business Analytics degree
- Member of Research Software and Database Advisory Group, ANU, 2014–2015

Department Service

- Director of PhD Program, UTS, since 2017
- AEA Interview Committee, ANU, 2015
- Member of Search and Visitors Committee, ANU, 2014–2015
- Member of Research and Research Higher Degrees Committee, ANU, 2014

Conference and Workshop Organization

- Program Committee, *Workshop on Empirical Methods in Macroeconomic Policy Analysis*, Bucharest, Romania, 2013, 2014

External Examiner on Ph.D. Theses

- Patrick Leung, Monash University, 2017
- Barnabe Djegnene, University of Montreal, 2012

Refereeing

Academic Journals

- Advances in Econometrics
- Annals of Operations Research (2)
- Annals of Statistics
- Canadian Journal of Economics
- Computational Statistics and Data Analysis (5)
- Econometric Reviews (3)
- Economic Modelling
- Economics Letters (5)
- Empirical Economics
- Energy Economics (3)
- Energy Journal
- European Economic Review
- European Journal of Finance
- European Journal of Operational Research (3)
- International Journal of Central Banking
- International Journal of Mathematical Modelling and Numerical Optimisation (2)
- International Journal of Forecasting (3)
- Journal of the American Statistical Association
- Journal of Banking and Finance (2)
- Journal of Business and Economic Statistics (8)
- Journal of Computational Finance (3)

- Journal of Computational and Graphical Statistics (2)
- Journal of Econometrics (4)
- Journal of Economic Dynamics and Control (2)
- Journal of Economic Surveys
- Journal of Empirical Finance (3)
- Journal of Financial Econometrics (2)
- Journal of Forecasting
- Journal of Money, Credit and Banking (2)
- Journal of Time Series Econometrics
- Macroeconomic Dynamics (3)
- Mathematics and Computers in Simulation (2)
- Methodology and Computing in Applied Probability
- Review of Economics and Statistics (2)
- Scandinavian Journal of Statistics
- SIAM Journal on Applied Mathematics
- Statistics and Computing (2)
- Statistics and Risk Modeling
- Studies in Nonlinear Dynamics and Econometrics (4)

Funding Agencies

- Australian Research Council
- Swiss National Science Foundation

Publisher

- John Wiley & Sons

ACADEMIC VISITS

Extended Academic Visits

- 2012 June: National Graduate Institute for Policy Studies, Tokyo, Japan
- 2010 February – March: Strathclyde University, Glasgow, UK
- 2009 July – August: Columbia University, New York, USA

SEMINAR & CONFERENCE PRESENTATIONS

Conference Presentations (from 2013)

- 2017 December: Masterclass, *The 5th Continuing Education in Macroeconometrics Workshop*, Sydney, Australia
- 2017 November: *National Bank of Poland Workshop on Forecasting*, Warsaw, Poland
- 2017 September: *The 4th Meeting of the Sydney Econometrics Research Group*, Sydney, Australia
- 2017 July: *The 11th Rimini Bayesian Econometrics Workshop*, Melbourne, Australia
- 2017 June: *The 37th International Symposium on Forecasting*, Cairns, Australia
- 2016 December: *The 10th International Conference on Computational and Financial Econometrics*, Seville, Spain
- 2016 July: *Melbourne Bayesian Econometrics Workshop*, Melbourne, Australia
- 2016 May: *The 10th Rimini Bayesian Econometrics Workshop*, Rimini, Italy
- 2015 December: (discussant) *RBA Workshop on Quantitative Macroeconomics*, Sydney, Australia
- 2015 May: *Glasgow SIRE Workshop on Econometric Modelling of Mixed-Frequency and "Big Data"*, Glasgow, UK
- 2015 March: *The 23rd Symposium of the Society for Nonlinear Dynamics and Econometrics*, Oslo, Norway
- 2014 December: *The 8th International Conference on Computational and Financial Econometrics*, Pisa, Italy
- 2014 June: *The 8th Rimini Bayesian Econometrics Workshop*, Rimini, Italy
- 2014 June: *Melbourne Bayesian Econometrics Workshop*, Melbourne, Australia
- 2014 May: *Workshop on Empirical Methods in Macroeconomic Policy Analysis*, Bucharest, Romania

- 2013 May: *Workshop on Empirical Methods in Macroeconomic Policy Analysis*, Bucharest, Romania
- 2013 April: *The 18th Australasian Macroeconomics Workshop*, Canberra, Australia
- 2013 February: *Melbourne Bayesian Econometrics Workshop*, Melbourne, Australia

Invited Seminars (from 2013)

- 2017 November: University of Melbourne
- 2017 September: Macquarie University
- 2017 July: Reserve Bank of Australia
- 2017 June: Reserve Bank of New Zealand
- 2017 April: University of Technology Sydney (statistics)
- 2016 October: Purdue University
- 2016 September: University of Sydney
- 2016 July: Deakin University
- 2016 May: University of Technology Sydney
- 2016 April: University of Queensland, University of New South Wales
- 2015 May: Central Bank of Ireland
- 2015 March: University of Bucharest
- 2014 April: University of Melbourne
- 2013 May: University of Queensland
- 2013 April: Monash University

Last update: December 2017