Joshua Chan

Contact Information

Economics Discipline Group
University of Technology Sydney
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Research Interests

Inflation modeling, output gap estimation, Bayesian model comparison, stochastic volatility models

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)

1. Chan, J.C.C. and Eisenstat, E. (2017). Efficient Estimation of Bayesian VARMAs with Time-Varying Coefficients, **Journal of Applied Econometrics**, forthcoming (A*)

2. 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 (A*)

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

4. 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 (A*)

5. 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 (A*)

6. 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 (A*)

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

8. 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 (A)

9. 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 (A)

10. 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 (A)

11. 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. (A*)

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

13. 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 (A*)

14. 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 (A)

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

16. 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 (A)

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

18. 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 (A*)

19. 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 (A*)

20. Chan, J.C.C. and Kroese, D.P. (2012). Improved Cross-Entropy Method for Estimation, **Statistics and Computing**, 22(5), 1031-1040 (A)

21. 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 (A)

22. Chan, J.C.C. and Kroese, D.P. (2011). Rare-event Probability Estimation with Conditional Monte Carlo, **Annals of Operations Research**, 189, 43-61 (A)

23. 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 (A*)

24. Chan, J.C.C. and Jeliazkov, I. (2009). MCMC Estimation of Restricted Covariance Matrix, **Journal of Computational and Graphical Statistics**, 18, 457–480 (A*)

25. 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

26. Chan, J.C.C. (2005). Replication of the Results in 'Learning about Heterogeneity in Returns to Schooling,' **Journal of Applied Econometrics**, 20, 439–443 (A*)

Book Chapters

27. 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

28. 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

29. 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

30. 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

- Asymptotic Trimming for Importance Sampling Estimators with Infinite Variance (with Chenghan Hou and Thomas Yang)
- Measuring Inflation Expectations Uncertainty Using High-Frequency Data (with Yong Song)
- Nonparametric Estimation in Economics: Bayesian and Frequentist Approaches (with Daniel Henderson, Christopher Parmeter and Justin Tobias)
- 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)
- A New Model of Inflation, Trend Inflation, and Long-Run Inflation Expectations (with Todd Clark and Gary Koop)

- Large Bayesian VARs: A Flexible Kronecker Error Covariance Structure
- Bayesian Model Comparison for Time-Varying Parameter VARs with Stochastic Volatility (with Eric Eisenstat)
- 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 and Awards

External Grants

- Discovery Project, The Australian Research Council, "Measuring inflation expectations and inflation expectations uncertainty", 2017-2019, $283,000.
- 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

Awards

- Best Poster for Mathematics, Annual Poster Day Competition, 2009
- International Postgraduate Research Scholarship, 2008–2011

Research Supervision

Ph.D. Students (placement)

- Minh Ngoc Nguyen, panel member, current
- Guanlong Ren, panel member, current
- Qingyin Ma, panel member, current
- Jamie Cross, panel member, current
- Beili Zhu, panel member, current
- Aubrey Poon, panel chair, current
- Bo Zhang, panel chair, current
- 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 research fellow, UNSW)

Teaching Experience

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
- *Bayesian Time Series Econometrics*, 2-day workshop at ANU, Australia, 2013

SERVICE

Department Service
- Director of PhD Program, UTS, 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

University Service
- Member of Research Software and Database Advisory Group, ANU, 2014–2015

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

External Examiner on Ph.D. Theses
- 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 (2)
- Economic Modelling
- Economics Letters (4)
- Empirical Economics
- Energy Economics
- 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 (6)
- Journal of Computational Finance (3)
- Journal of Computational and Graphical Statistics (2)
- Journal of Econometrics (4)
- Journal of Economic Dynamics and Control
- Journal of Economic Surveys
- Journal of Empirical Finance (3)
- Journal of Financial Econometrics (2)
- Journal of Forecasting
- Journal of Money, Credit and Banking
- 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 2011)
- 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
- 2012 August: *The 6th Rimini Bayesian Econometrics Workshop*, Toronto, Canada
- 2012 July: *Econometric Society Australasian Meeting*, Melbourne, Australia
- 2012 June: *International Society for Bayesian Analysis World Meeting*, Kyoto, Japan
- 2011 May: *The 5th Rimini Bayesian Econometrics Workshop*, Rimini, Italy

Invited Seminars (from 2011)
- 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
- 2011 February: Monash University, Australian National University

Last update: March 2017