Matteo Iacopini

Contact Information

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Research Interests

Tensor calculus - Bayesian Statistics - Graphical models - High dimensional data - Copula models - Econometrics - Functional data analysis - Nonparametric statistics.

References

Monica Billio – *Full Professor*
Department of Economics, Ca' Foscari University of Venice
Cannaregio 873/b, 30121 Venezia - Italy
E-mail: billio@unive.it

Roberto Casarin – *Associate Professor*
Department of Economics, Ca' Foscari University of Venice
Cannaregio 873/b, 30121 Venezia - Italy
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Dominique Guégan – *Full Professor*
Centre d'Économie de la Sorbonne, Université Paris I - Panthéon-Sorbonne
106-112 Boulevard de l'Hôpital - 75647 Paris cedex 13 - France
E-mail: Dominique.Guegan@univ-paris1.fr

Federico Bassetti – *Associate Professor*
Department of Mathematics, Polytechnic University of Milan
Piazza Leonardo da Vinci 32, 20133 Milan - Italy
E-mail: federico.bassetti@polimi.it

Positions

July 2018 – present
Research Fellow. Department of Economics, Ca' Foscari University of Venice - Italy.

Education

September 2014 – July 2018
joint Ph.D. in Economics (Ca' Foscari University of Venice - Italy) and **Ph.D. in Applied Mathematics** (Université Paris I - Panthéon-Sorbonne - France).

- Supervisors: prof. Monica Billio and prof. Dominique Guégan, prof. Roberto Casarin (co-supervisor).

Job Market Paper

"**Bayesian dynamic tensor regression**" (with Billio, M., Casarin, R. and S. Kaufmann)

Multidimensional arrays (i.e. tensors) of data are becoming increasingly available and call for suitable econometric tools. We propose a new dynamic linear regression model for tensor-valued response variables and covariates that encompasses some well known multivariate models such as SUR, VAR, VECM, panel VAR and matrix regression models as special cases. For dealing with the over-parametrization and over-fitting issues due to the curse of dimensionality, we exploit a suitable parametrization based on the parallel factor (PARAFAC) decomposition which enables to achieve both parameter parsimony and to incorporate sparsity effects. Our contribution is twofold: first, we provide an extension of multivariate econometric models to account for both tensor-variate response and covariates; second, we show the effectiveness of proposed methodology in defining an autoregressive process for time-varying real economic networks. Inference is carried out in the Bayesian framework combined with Monte Carlo Markov Chain (MCMC). We show the efficiency of the MCMC procedure on simulated datasets, with different size of the response and independent variables, proving computational efficiency even with high-dimensions of the parameter space. Finally, we apply the model for studying the temporal evolution of real economic networks.

Publications

Published

6. Tonellato, S. and *Iacopini, M.*, (2018), "A discussion on: Using stacking to average Bayesian predictive distributions by Y. Yao, A. Vehtari, D. Simpson and A. Gelman", Bayesian Analysis, *(forthcoming)*.

5. Billio, M., Casarin, R. and *Iacopini, M.*, (2018), "Bayesian tensor regression models", In Mathematical and Statistical Methods for Actuarial Sciences and Finance. MAF 2018. Eds. Corazza, M., Durbán, M., Grané, A., Perna, C., Sibillo, M., Springer, 149-153.

4. Billio, M., Casarin, R. and *Iacopini, M.*, (2018), "Bayesian tensor binary regression", In Mathematical and Statistical Methods for Actuarial Sciences and Finance. MAF 2018. Eds. Corazza, M., Durbán, M., Grané, A., Perna, C., Sibillo, M., Springer, 143-147.

3. Casarin, R., *Iacopini, M.* and Rossini, L., (2017), "A discussion on: Sparse graphs using exchangeable random measures by F. Caron and E. B. Fox", Journal of the Royal Statistical Society, Series B, 51-53.

2. Billio, M., Casarin, R. and *Iacopini, M.*, (2017), "Bayesian tensor regression models", In Proceedings of the Conference of the Italian Statistical Society. Statistics and Data Science: new challenges, new generations. Eds. Alessandra Petrucci and Rosanna Verde, Firenze University Press, 179-186.

1. *Iacopini, M.*, (2016), "Basics of optimization theory with applications in MATLAB and R", Quaderni di didattica, Department of Economics, Ca' Foscari University of Venice.

Working Papers

3. Billio, M., Casarin, R. and *Iacopini, M.*, (2018), "Bayesian Markov switching tensor regression for time-varying networks", arXiv preprint 1711.00097

2. Billio, M., Casarin, R., Kaufmann, S. and *Iacopini, M.*, (2018), "Bayesian dynamic tensor regression", arXiv preprint 1709.09606

1. Guégan, D. and *Iacopini, M.* (2018), "Nonparametric forecasting of multivariate probability density functions", arXiv preprint 1803.06823

Scholarships and Grants

- Research Fellowship from Ca' Foscari University of Venice (September 2017–August 2018)
- co-editor of the financing proposal (competition won) "Bando Label Scientifico UIF/UFI 2018" from Université Franco-Italienne (2018)
- Ph.D. scholarship at Ca' Foscari University of Venice financed by the Ministry of Education, University and Research - MIUR (September 2014–August 2017)
- co-editor of the financing proposal (competition won) "Bando Visiting Professor UIF 2017" from Université Franco-Italienne (2017)
- co-editor of the financing proposal (competition won) "Bando Label Scientifico UIF/UFI 2017" from Université Franco-Italienne (2017)
- winner of the grant "Bando Vinci 2016" from Université Franco-Italienne (2016–2017)

Presentations

Invited Presentations and Seminars

- Seminar at Department of Mathematics, Polytechnic University of Milan, Italy (November 8, 2018)

Contributed Presentations

- 6^{th} SIdE Workshop for PhD students in Econometrics and Empirical Economics (WEEE). Perugia, Italy (August 23-24, 2018)
- 49^{th} SIS - Scientific meeting of the Italian Statistical Society. Palermo, Italy (June 20-22, 2018)
- 12^{th} Annual RCEA Bayesian Workshop. Rimini, Italy (June 14-15, 2018)
- 1^{st} QFFE - International Conference on Quantitative Finance and Financial Econometrics. Marseille, France (May 30 - June 1, 2018)

- 8^{th} MAF - International Conference on Mathematical and Statistical Methods for Actuarial Sciences and Finance. Madrid, Spain (April 4-6, 2018)
- 11^{th} CFENetwork International Conference on Computational and Financial Econometrics. London, United Kingdom (December 16-18, 2017)
- 8^{th} ESOBE - European Seminar on Bayesian Econometrics Annual Workshop. Maastricht, Netherlands (October 26-27, 2017)
- 41^{st} AMASES Annual Meeting. Cagliari, Italy (September 14-16, 2017)
- 1^{st} EcoSta - International Conference on Econometrics and Statistics. Hong Kong, Hong Kong (June 15-17, 2017)
- 3^{rd} Workshop on High-Dimensional Time Series in Macroeconomics and Finance. Wien, Austria (June 8-9, 2017)
- ICEEE 2017 - 7^{th} Italian Congress of Econometrics and Empirical Economics. Messina, Italy (January 25-27, 2017)
- 10^{th} CFENetwork International Conference on Computational and Financial Econometrics. Seville, Spain (December 9-11, 2016)
- 22^{nd} COMPSTAT International Conference on Computational Statistics. Oviedo, Spain (August 23-26, 2016)
- Joint PhD Workshop - Economics Management. Ca' Foscari University of Venice, Italy (June 23, 2016)

Poster Presentations

- High Dimensional Small Data Workshop. Venice, Italy (October 19-20, 2018)
- 4^{th} BAYSM - Bayesian Young Statisticians Meeting. Warwick, United Kingdom (July 2-3, 2018)
- ISBA 2018 World Meeting. Edinburgh, United Kingdom (June 24-29, 2018)
- BNP 11 - 11^{th} Conference on Bayesian Nonparametrics. Paris, France (June 26-30, 2017)
- BISP-10 - 10^{th} Workshop on Bayesian Inference in Stochastic Processes. Milan, Italy (June 13-15, 2017)
- 7^{th} ESOBE - European Seminar on Bayesian Econometrics Annual Workshop. Venice, Italy (October 27-28, 2016)

Service to Profession

Scientific and Organising Committee of Scientific Events

- "*Reading group on Stochastic Modelling*". Venice, Italy (A.Y. 2018-2019)
- "2^{nd} *Italian-French Statistics Workshop*". Grenoble, France (September 6-7, 2018).
- Workshop on "*Advances in Bayesian modelling*". Venice, Italy (July 5, 2018)
- "1^{st} *Italian-French Statistics Workshop*". Venice, Italy (October 16-17, 2017).

Organizer of Scientific Events

- Organizer and chair of the session "*Bayesian High-dimensional Sparse Models*" at 12^{th} Annual RCEA Bayesian Workshop. Rimini, Italy (June 14-15, 2018)
- Chair of the session "*Network Econometrics*" at 8^{th} MAF - International Conference on Mathematical and Statistical Methods for Actuarial Sciences and Finance. Madrid, Spain (April 4-6, 2018)

Discussant

- Workshop on Forecasting in Finance and Macroeconomics. Bozen, Italy (September 12, 2016)
- European Doctorate in Economics Erasmus Mundus (EDEEM) Summer Meeting. Venice, Italy (July 16-18, 2015)

Teaching Experience

Ca' Foscari University of Venice, Department of Economics

Academic year 2018/2019
- Teacher – Mathematics pre-course (Graduate Course - *"Master II livello"* – English).
- Tutor – Optimization (Graduate Course – English).

Academic year 2017/2018
- Teacher – Introduction to Trigonometry (Undergraduate Course – English).
- Teaching Assistant – Mathematics for Economics (Undergraduate Course – Italian).
- Teaching Assistant – Statistics (Undergraduate Course – English).
- Tutor – Optimization (Graduate Course – English).

Academic year 2015/2016

- Tutor – Econometrics (Graduate Course – English).
- Tutor – Econometrics (Undergraduate Course – Italian).
- Tutor – Optimization (Graduate Course – English).

Referee Activity

International Journal of Forecasting (2018 - present), Econometrics & Statistics (2018 - present), Studies in Nonlinear Dynamics & Econometrics (2017 - present).

Visiting periods

- University of Pavia, Department of Mathematics, (9-13 April 2018).
- Université Paris I - Panthéon-Sorbonne, (September 2016 - June 2017).

Post-Graduate formation

- CIRM Research School "Masterclass in Bayesian Statistics". Marseille Luminy, France (22-26 October, 2018)
- SIdE Econometrics Summer School on "Recent Developments in Financial Econometrics". Perugia, Italy (23-27 July, 2018)
- 37^{th} Finnish Summer School on Probability and Statistics. Lammi, Finland (May 30 - June 3, 2016)
- Postgraduate Course on "Data Analysis and Programming with R". Bozen, Italy (November 18-20, 2015)
- Postgraduate Course on "Bayesian Methods in Economics and Finance". Perugia, Italy (September 7-11, 2015)
- SIdE Econometrics Summer School on "Big Data and High-Dimensional Econometric models". Perugia, Italy (June 29 - July 3, 2015)
- SIdE Econometrics Summer School on "The Econometrics of Systemic Risk and Tail Correlations". Perugia, Italy (July 14-19, 2014)

Languages & Programming Skills

Languages

- *Italian* (Mother Tongue)
- *English* (Fluent) - certifications: IELTS (C1), GRE
- *French* (Fluent) - certifications: DELF (B2)
- *Spanish* (Basic)

Programming Skills

Advanced	Matlab, R, LaTeX, Microsoft Office (Excel, Word, PowerPoint)
Intermediate	STATA13
Basic	C++, GRETL