Matteo Iacopini

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Contact Information

Faculty of Sciences
Scuola Normale Superiore of Pisa
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Research Interests

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

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 – *Full Professor*
Department of Economics, Ca' Foscari University of Venice
Cannaregio 873/b, 30121 Venezia - Italy
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Federico Bassetti – *Associate Professor*
Department of Mathematics, Polytechnic University of Milan
Piazza Leonardo da Vinci 32, 20133 Milan - 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
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Positions

- **Research Fellow**. Scuola Normale Superiore of Pisa, Italy (04/2019 - now)
- **Research Fellow**. Ca' Foscari University of Venice, Department of Economics, Italy (07/2018 – 03/2019)

Education

joint Ph.D. in Economics, at Ca' Foscari University of Venice, Italy, and **Ph.D. in Applied Mathematics** at Université Paris I - Panthéon-Sorbonne, France (09/2014 – 07/2018)
Thesis: *Essays on the Econometric modelling of Temporal Networks.* Supervisors: M. Billio, R. Casarin, D. Guégan.

Visiting periods

- Palacky University in Olomuc (Czech Republic), Department of Mathematical Analysis and Applications of Mathematics: 29 October - 2 November 2019
- Vrije University of Amsterdam (The Netherlands), Department of Econometrics and Operations Research: 16-20 September 2019; 19-23 March 2019; 28-31 January 2019
- Polytechnic University of Milan (Italy), Department of Mathematics: 15-17 July 2019; 6-10 May 2019
- Ca' Foscari University of Venice (Italy), Department of Economics: 24-26 July 2019; 11-14 June 2019; 28-31 May 2019
- University of Pavia (Italy), Department of Mathematics: 9-13 April 2018
- Université Paris I - Panthéon-Sorbonne (France): September 2016 - June 2017

Job Market Paper

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

High dimension and multi-array data are becoming increasingly available in economics. They allow a suitable representation as tensor-valued data and this calls for appropriate econometric tools. We propose a new dynamic linear model for tensor-valued response variables and covariates that encompasses some well-known econometric models as special cases. Our contribution is manifold. First, we define a tensor autoregressive process (ART), study its properties and derive the associated impulse response function. Second, we exploit the PARAFAC low-rank decomposition for providing a parsimonious parametrization and to incorporate sparsity effects. We also contribute to inference methods for tensors by developing a Bayesian framework which allows for including extra-sample information and for introducing shrinking effects. We apply the ART model to time-varying multilayer networks of international trade and outstanding credit and study the propagation of shocks across countries, over time and between layers.

Publications

Published

7. Casarin, R., Iacopini, M., Molina, G., ter Horst, E., Espinasa, R., Sucre, C. and Rigobon, R. (2020), "Multilayer network analysis of oil linkages", *The Econometrics Journal*, utaa003, `https://doi.org/10.1093/ectj/utaa003`

6. Iacopini, M. and Tonellato, S. (2018), "A discussion on: Using stacking to average Bayesian predictive distributions by Y. Yao, A. Vehtari, D. Simpson and A. Gelman", *Bayesian Analysis*, 13(3):994–996.
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*, 79(5):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.

Manuscripts Submitted and under Review

2. Billio, M., Casarin, R. and Iacopini, M., (2019), "Bayesian Markov switching tensor regression for time-varying networks", arXiv preprint 1711.00097 (*under review*)
1. Iacopini, M. and Santagiustina, C.R.M.A., (2019), "Filtering the intensity of public concern from Social Media count data with jumps" (*submitted*)

Working Papers

3. Billio, M., Casarin, R., Kaufmann, S. and Iacopini, M., (2019), "Bayesian dynamic tensor regression", arXiv preprint 1709.09606
2. Iacopini, M. and Rossini, L. (2019), "Bayesian nonparametric graphical models for time-varying parameters VAR", arXiv preprint 1906.02140
1. Guégan, D. and Iacopini, M. (2018), "Nonparametric forecasting of multivariate probability density functions", arXiv preprint 1803.06823

Work in Progress

2. Bassetti, F., Casarin, R. and Iacopini, M. (20xx), "Bayesian nonparametric inference for measure-valued Autoregressive Gamma processes"
1. Bassetti, F., Casarin, R., Epifani, I. and Iacopini, M. (20xx), "Measure-valued Compound Autoregressive processes"

Scholarships and Grants

- Research Fellowship financed by INDAM at Scuola Normale Superiore of Pisa (April 2019–March 2020)
- Research Fellowship from Ca' Foscari University of Venice (September 2017–March 2019)
- 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)
- "Percorso di Eccellenza" scholarship from University of Pisa (2011-2012)
- "Percorso di Eccellenza" scholarship from University of Pisa (2008-2011)

Presentations

Invited Seminars

Seminar at Department of Mathematical Analysis and Applications of Mathematics, Palacky University in Olomouc, Czech Republic, (November 1, 2019) – Seminar at School of Business and Economics, University of Maastricht, The Netherlands (April 26, 2019) – Seminar at Department of Econometrics and Operations Research, Vrije University of Amsterdam, The Netherlands (March 21, 2019) – Seminar at School of

Business and Economics, University of Maastricht, The Netherlands (January 22, 2019) – Seminar at Department of Mathematics, Polytechnic University of Milan, Italy (November 8, 2018)

Contributed Presentations

8^{th} CoDaWork. Terrassa, Spain (June 4-7, 2019) – 4^{th} Workshop on High-Dimensional Time Series in Macroeconomics and Finance. Wien, Austria (May 16-17, 2019) – 8^{th} ICEEE. Lecce, Italy (January 24-26, 2019) – 12^{th} CFENetwork. Pisa, Italy (December 14-16, 2018) – 29^{th} EC^2. Rome, Italy (December 13-14, 2018) – 6^{th} SIdE Workshop for PhD students in Econometrics and Empirical Economics. Perugia, Italy (August 23-24, 2018) – 49^{th} SIS. Palermo, Italy (June 20-22, 2018) – 12^{th} RCEA Bayesian Workshop. Rimini, Italy (June 14-15, 2018) – 1^{st} QFFE. Marseille, France (May 30 - June 1, 2018) – 8^{th} MAF. Madrid, Spain (April 4-6, 2018) – 11^{th} CFENetwork. London, United Kingdom (December 16-18, 2017) – 8^{th} ESOBE. Maastricht, Netherlands (October 26-27, 2017) – 41^{st} AMASES. Cagliari, Italy (September 14-16, 2017) – 1^{st} EcoSta. 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) – 7^{th} ICEEE. Messina, Italy (January 25-27, 2017) – 10^{th} CFENetwork. Seville, Spain (December 9-11, 2016) – 22^{nd} COMPSTAT. Oviedo, Spain (August 23-26, 2016)

Poster Presentations

BNP 12. Oxford, United Kingdom (June 24-28, 2019) – 4^{th} BAYSM. Warwick, United Kingdom (July 2-3, 2018) – ISBA 2018. Edinburgh, United Kingdom (June 24-29, 2018) – BNP 11. Paris, France (June 26-30, 2017) – BISP-10. Milan, Italy (June 13-15, 2017) – 7^{th} ESOBE. Venice, Italy (October 27-28, 2016)

Service to Profession

Scientific and Organising Committee of Scientific Events

- Workshop "3^{rd} *Italian-French Statistics Seminar (IFSS)*". Italy (2020).
- Workshop "1^{st} *EDEEM Doctoral Summer Workshop in Economics*". Venice, Italy (June 13-14, 2019).
- "*Reading group on Stochastic Modelling*". Venice, Italy (A.Y. 2018-2019)
- Workshop "2^{nd} *Italian-French Statistics Seminar (IFSS)*". Grenoble, France (September 6-7, 2018).
- Workshop on "*Advances in Bayesian modelling*". Venice, Italy (July 5, 2018)
- Workshop "1^{st} *Italian-French Statistics Seminar (IFSS)*". 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)

Referee

Bayesian Analysis, Journal of Financial Stability, International Journal of Forecasting, Econometrics & Statistics, Studies in Nonlinear Dynamics & Econometrics.

Teaching Experience

Ca' Foscari University of Venice, Department of Economics

- Teacher – Mathematics pre-course (Graduate – English), A.y. 2019/20, 2018/19
- Tutor – Optimization (Graduate Course - PhD and Master – English), A.y. 2018/19, 2017/18, 2015/16
- Teacher – Introduction to Trigonometry (Undergraduate – English), A.y. 2017/18
- Teaching Assistant – Mathematics for Economics (Undergraduate – Italian), A.y. 2017/18
- Teaching Assistant – Statistics (Undergraduate – English), A.y. 2017/18
- Tutor – Econometrics (Graduate – English), A.y. 2015/16
- Tutor – Econometrics (Undergraduate – Italian), A.y. 2015/16

Post-Graduate formation

- CIRM "Masterclass in Bayesian Statistics". Marseille Luminy, France (22-26 October, 2018)
- SIdE Summer School on "Recent Developments in Financial Econometrics". Perugia, Italy (July 23-27, 2018)
- 37^{th} Finnish Summer School on Probability and Statistics. Lammi, Finland (May 30 - June 3, 2016)
- Course on "Data Analysis and Programming with R". Bozen, Italy (November 18-20, 2015)
- Course on "Bayesian Methods in Economics and Finance". Perugia, Italy (September 7-11, 2015)
- SIdE Summer School on "Big Data and High-Dimensional Econometric models". Perugia, Italy (June 29 - July 3, 2015)
- SIdE 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, IELTS(C1), GRE) – *French* (Fluent, DELF(B2)) – *Spanish* (Basic) **Programming Skills**: MATLAB, R, LaTeX, Office (advanced), STATA13, C++, HTML5 (basic)