Matteo Iacopini

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Contact Information

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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 Venice - Italy
E-mail: billio@unive.it

Roberto Casarin – *Full Professor*
Department of Economics, Ca' Foscari University of Venice
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Federico Bassetti – *Full Professor*
Department of Mathematics, Polytechnic University of Milan
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André Lucas – *Full Professor*
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Positions

- (09/2022 - ...) **Lecturer in Statistics**. Queen Mary University London, School of Mathematical Sciences, United Kingdom
- (10/2020 - 08/2022) **Research Fellow (Marie Sklodowska-Curie fellowship)**. Vrije Universiteit Amsterdam, Department of Econometrics and Data Science, The Netherlands
- (04/2019 - 03/2020) **Research Fellow**. Scuola Normale Superiore of Pisa, Italy
- (07/2018 – 03/2019) **Research Fellow**. Ca' Foscari University of Venice, Department of Economics, Italy

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

- Paris Lodron University of Salzburg, Department of Economics, Austria (7-8 June 2022)
- Polytechnic University of Milan, Department of Mathematics, Italy (8-12 November 2021)
- University of Milan, Department of Economics, Management, and Quantitative Methods, Italy (11-15 October 2021)
- Palacky University in Olomuc, Department of Mathematical Analysis and Applications of Mathematics, Czech Republic (29 October - 2 November 2019)
- Polytechnic University of Milan, Department of Mathematics, Italy (6-10 May 2019)
- Vrije University of Amsterdam, Department of Econometrics and Operations Research, The Netherlands (19-23 March 2019)
- Vrije University of Amsterdam, Department of Econometrics and Operations Research, The Netherlands (28-31 January 2019)
- University of Pavia, Department of Mathematics, Italy (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- and multi-dimensional array data are becoming increasingly available. They admit a natural representation as tensors and call for appropriate statistical tools. We propose a new linear autoregressive tensor process (ART) for tensor-valued data, that encompasses some well-known time series models as special cases. We study its properties and derive the associated impulse response function. We exploit the PARAFAC low rank decomposition for providing a parsimonious parametrization and develop a Bayesian inference allowing for shrinking effects. We apply the ART model to time series of multilayer networks and study the propagation of shocks across nodes, layers and time.

PUBLICATIONS **Published**

16. Billio, M., Casarin, R. and *Iacopini, M.*, (2022), "Bayesian Markov switching tensor regression for time-varying networks", *Journal of the American Statistical Association* (*forthcoming*), (article)

15. Billio, M., Casarin, R., *Iacopini, M.* and Kaufmann, S. (2022), "Bayesian dynamic tensor regression", *Journal of Business and Economic Statistics* (forthcoming), (article)

14. *Iacopini, M.,* Ravazzolo, F. and Rossini, L. (2022), "Proper scoring rules for evaluating density forecasts with asymmetric loss functions", *Journal of Business and Economic Statistics* (forthcoming), (article)

13. Billio, M., Casarin, R., Costola, M. and *Iacopini, M.* (2021), "Matrix-variate Smooth Transition Models for Temporal Networks", in Arashi, M., Bekker, A., Che, D., and Ferreira, J., Innovations in Multivariate Statistical Modeling: navigating theoretical and multidisciplinary domains, chapter XX, pages XX, Springer Emerging Topics in Statistics and Biostatistics. (forthcoming)

12. Billio, M., Casarin, R., Costola, M. and *Iacopini, M.* (2021), "COVID-19 spreading in financial networks: A semiparametric matrix regression model", *Econometrics and Statistics* (forthcoming), (article)

11. Costola, M., *Iacopini, M.* and Santagiustina, C.R.M.A. (2021), "On the "mementum" of meme stocks", *Economics Letters*, 207, 110021, (article)

10. Billio, M., Casarin, R., Costola, M. and *Iacopini, M.* (2021), "A matrix-variate t model for networks", *Frontiers in Artificial Intelligence* 4, 49, (article)

9. *Iacopini, M.* and Santagiustina, C.R.M.A. (2021), "Filtering the intensity of public concern from social media count data with jumps", *Journal of the Royal Statistical Society: Series A*, 184:1283–1302, (article)

8. Costola, M., *Iacopini, M.* and Santagiustina, C. (2020), "Google search volumes and the financial markets during the COVID-19 outbreak", *Finance Research Letters*, 42:101884, (article)

7. *Iacopini, M.*, Ravazzolo, F. and Rossini, L. (2020), "A discussion on: On a Class of Objective Priors from Scoring Rules by F. Leisen, C. Villa and S. G. Walker", *Bayesian Analysis*, 15(4):1392–1393.

6. 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, (article)

5. *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.

4. 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.

3. 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.

2. 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.

1. 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.

Manuscripts Submitted and under Review

2. Bianchi, D., *Iacopini, M.* and Rossini, L. (20XX), "Stablecoins and Cryptocurrency Returns: Evidence from large Bayesian VARs". Available at SSRN: https://dx.doi.org/10.2139/ssrn.3605451 (*under review*)

1. Santagiustina, C.R.M.A. and *Iacopini, M.* (20XX), "Visualizing and comparing distributions with half-disk density strips" (*submitted*)

Working Papers

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

Others

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.

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

- Marie Skłodowska-Curie Individual Fellowship financed by the European Commission (October 2020–September 2022)
- 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

Invited Speaker at "Bayesian Nonparametrics Networking workshop", Nicosia, Cyprus (25-29 April 2022) – Seminar at Department of Economics, Ca' Foscari University of Venice, Italy (2 February 2022) – Seminar at Department of Mathematical Analysis and Applications of Mathematics, Palacky University in Olomouc, Czech Republic, (1 November 2019) – Seminar at School of Business and Economics, University of Maastricht, The Netherlands (26 April 2019) – Seminar at Department of Econometrics and Operations Research, Vrije Universiteit Amsterdam, The Netherlands (21 March 2019) – Seminar at School of Business and Economics, University of Maastricht, The Netherlands (22 January 2019) – Seminar at Department of Mathematics, Polytechnic University of Milan, Italy (8 November 2018)

Contributed Presentations

5^{th} Workshop on High-Dimensional Time Series in Macroeconomics and Finance. Wien, Austria (June 9-10, 2022) – 3^{rd} IWEEE. Rimini, Italy (January 20-21, 2022) – CFENetwork. London, United Kingdom (December 18-20, 2021) – 4^{th} Annual Workshop on Financial Econometrics. Örebro, Sweden (November 15-16, 2021) – 11^{th} ESOBE. Madrid, Spain (September 2-3, 2021) – IAAE 2021. Rotterdam, The Netherlands (June 22-25, 2021) – 12^{th} BISP. Milan, Italy (May 27-28, 2021) – Dynamic Econometrics Conference. Virtual (March 18-19, 2021) – 11^{th} EC^2. Paris, France (December 11-12, 2020) – Annual Meeting of the Econometrics Society. Milan, Italy (August 17-21, 2020) – 2^{nd} IWEEE. Venice, Italy (January 23-24, 2020) – 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

Journal of Business & Economic Statistics, Journal of Econometrics, Bayesian Analysis, International Journal of Forecasting, PLOS One, Statistics and Probability Letters, Computational Statistics and Data Analysis, Journal of Forecasting, Econometrics & Statistics, Journal of Economics and Finance, STAT, Frontiers in Big Data, Journal of Financial Risk and Management, Journal of Financial Stability, Studies in Nonlinear Dynamics & Econometrics.

Teaching Experience

Italian Econometric Society (SIdE)

- Teacher – Summer School in Network Econometrics (Graduate – English), June 2022, June 2021

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)