Claudia Di Caterina

CURRICULUM VITAE

(Last update: May 2023)

Contact information

University of Verona
Department of Economics
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Current position

Since October 2021
Assistant Professor (*Ricercatore a Tempo Determinato di tipo b*)
University of Verona, Department of Economics.

Research interests

- Likelihood and pseudo-likelihood inference
- Likelihood asymptotics
- Statistical treatment of nuisance parameters
- Statistical computing
- Bias reduction techniques
- Missing data analysis

Positions held

March 2020 – September 2021
Assistant Professor (*Ricercatore a Tempo Determinato di tipo a*)
Free University of Bozen-Bolzano, Faculty of Economics and Management.

January 2019 – January 2020
Research Assistant (*Assistente di Ricerca*)
Free University of Bozen-Bolzano, Faculty of Economics and Management.
Research project title: *Efficient Measurement of Uncertainty in the Selection of Statistical Models via Resampling (REASSURE)*
Supervisor: Prof. Davide Ferrari

January 2017 – December 2018
Postdoctoral Fellow (*Assegnista di Ricerca*)
University of Padova, Department of Statistical Sciences.
Research project title: *Approximate Likelihood Inference with High-dimensional Models*
Supervisor: Prof. Nicola Sartori

Education

January 2014 – March 2017
PhD in Statistical Sciences
University of Padova, Department of Statistical Sciences.
Thesis title: *Reducing the Impact of Bias in Likelihood Inference for Prominent Model Settings*
Supervisor: Prof. Nicola Sartori
Co-supervisor: Dr. Ioannis Kosmidis

October 2011 – July 2013
Master degree (*Laurea Magistrale*) in Statistical Sciences
University of Padova, Department of Statistical Sciences.
Title of dissertation: *Modified Profile Likelihood in Dynamic Panel Data Models*
Supervisor: Prof. Nicola Sartori
Final mark: 110/110 *cum laude*

October 2008 – July 2011
Bachelor degree (*Laurea Triennale*) in Statistics, Economics and Finance
University of Padova, Faculty of Statistical Sciences.
Title of dissertation: *Bootstrap for Time Series*
Supervisor: Prof. Luisa Bisaglia
Final mark: 110/110 *cum laude*

Visiting periods

April 2019 – June 2019
Department of Statistical Sciences, University of Toronto
Toronto, Canada.
Supervisor: Prof. Nancy Reid

September 2015 – September 2016
Department of Statistical Science, University College
London, United Kingdom.
Supervisor: Dr. Ioannis Kosmidis

Publications

Papers in journals
Di Caterina, C., Reid, N. and Sartori, N. Directional tests in Gaussian graphical models. *Statistica Sinica*, to appear. DOI: 10.5705/ss.202022.0394.

Huang, C., Di Caterina, C. and Sartori, N. (2022). Directional testing for high dimensional normal distributions. *Electronic Journal of Statistics*, **16**, 6489–6511. DOI: 10.1214/22-EJS2089.

Di Caterina, C., Cortese, G. and Sartori, N. (2019). Monte Carlo modified profile likelihood in models for clustered data. *Electronic Journal of Statistics* **13**, 432–464. DOI: 10.1214/19-EJS1532.

Di Caterina, C. and Kosmidis, I. (2019). Location-adjusted Wald statistics for scalar parameters. *Computational Statistics and Data Analysis* **138**, 126–142. DOI: 10.1016/j.csda.2019.04.004.

Articles in proceedings

Di Caterina, C., Reid, N., Sartori, N. (2022). Accurate directional inference for Gaussian graphical models. *Book of Short Papers SIS 2022 (Balzanella, A., Bini, M., Cavicchia, C. and Verdi, R., editors)* **4**, 1637–1642. ISBN: 978-88-9193-231-0.

Di Caterina, C., Ferrari, D. (2022). Sparse composite likelihood selection. *Proceedings of the 36th International Workshop on Statistical Modelling (Torelli, N., Bellio, R., and Muggeo, V., editors)* **3**, 423–426. ISBN: 978-88-5511-309-0.

Roner, C., Di Caterina, C., Ferrari, D. (2022). Robust zero-inflated interval regression for cyber security survey data. *Proceedings of the 36th International Workshop on Statistical Modelling (Torelli, N., Bellio, R., and Muggeo, V., editors)* **3**, 563–566. ISBN: 978-88-5511-309-0.

Di Caterina, C., Ferrari, D. and La Vecchia, D. (2019). Inference on high-dimensional graphical models via pairwise likelihood truncation. *Proceedings of the 21st European Young Statisticians Meeting (Milošević, B., and Obradović, M., editors)*, 20–24. ISBN: 978-86-7589-137-6.

Di Caterina, C. and Sartori, N. (2018). Modified profile likelihood in models for clustered data with missing values. *Book of Short Papers SIS 2018 (Abbruzzo, A., Piacentino, D., Chiodi, M. and Brentari, E., editors)* **5**, 1401–1406. ISBN: 978-88-9191-023-3.

Di Caterina, C., Cortese, G. and Sartori, N. (2017). Monte Carlo modified profile likelihood in survival models for clustered censored data. *Proceedings of the 32nd International Workshop on Statistical Modelling (Grzegorczyk, M. and Ceoldo, G., editors)* **2**, 193–196.

Di Caterina, C. and Kosmidis, I. (2016). Bias corrected z-tests for regression models. *Proceedings of the 31st International Workshop on Statistical Modelling (Dupuy, J.-F. and Josse, J., editors)* **1**, 87–92.

Papers under review

Roner, C., Di Caterina, C. and Ferrari, D. Exponential tilting for zero-inflated interval regression with applications to cyber security survey data. Available at `https://ideas.repec.org/p/bzn/wpaper/bemps85.html`. *Under review.*

PhD Thesis

Di Caterina, C. (2017). Reducing the impact of bias in likelihood inference for prominent model settings (`http://paduaresearch.cab.unipd.it/10305/`). University of Padova, Department of Statistical Sciences.

Software

- `waldi`: R package providing methods to compute location-adjusted Wald statistics and confidence intervals for popular model classes (joint with I. Kosmidis). Available on GitHub: `https://github.com/ikosmidis/waldi`

- `panelMPL`: new version of the R package for Monte Carlo modified profile likelihood estimation in fixed-effects models for clustered data. *Under development.*
  Previous version, authored by R. Bellio and N. Sartori, available at `http://ruggerobellio.weebly.com/software.html`

Conference presentations

Invited talks

Di Caterina, C. and Kosmidis, I. (2020). Location-adjusted Wald statistics for scalar parameters.

Invited talk at the *ISM 2020 Workshop*, Sestri Levante (GE), Italy, January 27–28.

Di Caterina, C., Ferrari, D., and La Vecchia, D. (2019). Sparse covariance matrix estimation via truncated pairwise likelihood. Invited talk at the *21st European Young Statisticians Meeting (EYSM 2019)*, Belgrade, Serbia, July 29–August 2.

Di Caterina, C. and Kosmidis, I. (2019). Location-adjusted Wald statistics for scalar parameters. Invited talk at the *PRIN 2015 Intermediate Workshop*, Padova, Italy, February 19.

Di Caterina, C., Cortese, G., and Sartori, N. (2018). Monte Carlo modified profile likelihood in survival models for clustered censored data. Invited talk at the *11th International Conference of the ERCIM Working Group on Computational and Methodological Statistics (CMStatistics 2018)*, Pisa, Italy, December 14–16.

Di Caterina, C. and Kosmidis, I. (2017). Location-adjusted Wald statistic for scalar parameters. Invited talk at the *5th StaTalk Workshop*, Padova, Italy, November 17.

Contributed talks
Di Caterina, C., Reid, N., Sartori, N. (2022). Accurate directional inference for Gaussian graphical models. Talk at the *51st Scientific Meeting of the Italian Statistical Society*, Caserta, Italy, June 22–24.

Di Caterina, C., Reid, N. and Sartori, N. (2021). Accurate directional inference in Gaussian graphical models. Talk at the *International Conference of the Royal Statistical Society*, Manchester, England, September 6–9.

Di Caterina, C. and Kosmidis, I. (2018). Location-adjusted Wald statistics for scalar parameters. Talk at the *International Conference of the Royal Statistical Society*, Cardiff, Wales, September 3–6.

Di Caterina, C. and Sartori, N. (2018). Modified profile likelihood in models for clustered data with missing values. Talk at the *49th Scientific Meeting of the Italian Statistical Society*, Palermo, Italy, June 20–22.

Di Caterina, C. and Kosmidis, I. (2016). Adjusted z-tests for regression models. Talk at the *31st International Workshop on Statistical Modelling*, Rennes, France, July 4–8.

Posters
Di Caterina, C., Ferrari, D. (2022). Sparse composite likelihood selection. *36th International Workshop on Statistical Modelling*, Trieste, Italy, July 18–22.

Roner, C., Di Caterina, C., Ferrari, D. (2022). Robust zero-inflated interval regression for cyber security survey data. *36th International Workshop on Statistical Modelling*, Trieste, Italy, July 18–22.

Di Caterina, C., Cortese, G. and Sartori, N. (2017). Monte Carlo modified profile likelihood in survival models for clustered censored data. *32nd International Workshop on Statistical Modelling*, Groningen, The Netherlands, July 3–7.

Di Caterina, C. and Sartori, N. (2016). Monte Carlo modified profile likelihood for panel data models. *22nd International Conference on Computational Statistics (COMPSTAT 2016)*, Oviedo, Spain, August 23–26.

Seminars

May 2020
Internal seminar *Simultaneous model selection and inference by sparse combination of estimating equations* at the Free University of Bozen-Bolzano, Faculty of Economics and Management.

May 2017
Invited seminar *Reducing the Impact of Bias in Likelihood Inference* at the University of Trieste, Department of Economical, Business, Mathematical and Statistical Sciences "Bruno de Finetti".

Research grants

2020–2021: Co-Investigator of the research project *Populism as simplistic commitment* supported by the Free University of Bozen-Bolzano. Budget: 10 000 euros. Principal Investigator: Dr. P. Roberti.

2020–2021: Member of the research project *Detecting and quantifying (side-)effects of recent experimental therapies against Chronic Myeloid Leukemia* supported by the Free University of Bozen-Bolzano. Budget: 82 000 euros. Principal Investigator: Dr. P. Lecca.

2020–2021: Principal Investigator of the research project *Efficient statistical analysis of mixed-type data with applications to business economics and epidemiology* supported by the Free University of Bozen-Bolzano. Budget: 8 000 euros.

April–September 2020: Co-Investigator of the research project *Research training collaboration on time series analysis* supported by European Academy of Bozen/Bolzano (EURAC). Budget: 2 000 euros.

2017–2019: Member of the national research project PRIN *Likelihood-free methods of inference* supported by the Italian Ministry of Instruction, University and Research (MIUR). Budget: 26 000 euros. National Principal Investigator: Prof. B. Liseo. Padova Unit Principal Investigator: Prof. L. Ventura.

2016–2018: Member of the research project *Advances in likelihood-based inference in Biostatistics with application to measurement error problems and meta-analysis* supported by the University of Padova. Budget: 46 873 euros. Principal Investigator: Prof. A. Guolo.

2014–2016: Member of the research project *Neo-Fisherian and Bayesian inference for intractable likelihoods: modern approaches with application in Life Sciences* supported by the University of Padova. Budget: 67 580 euros. Principal Investigator: Prof. N. Sartori.

Industry consulting projects

2020–2021: Member of the research project *Data Normalization Intelligence* supported by Corvallis Spa. Principal Investigator: Prof. D. Ferrari.

Teaching

Academic year 2022/2023

- Lecturer (8 hours) in the PhD course *Introduction to Probability - Module II*. University of Verona, PhD School.

- Lecturer (84 hours, ongoing) in the undergraduate course *Analisi Statistica per le Decisioni d'Impresa*. University of Verona, Bachelor's degrees in Economics, Firms and International Markets (Vicenza) and Business Innovation and Economics (Vicenza).

- Lecturer (12 hours) in the graduate course *Machine Learning for Economics*. University of Verona, Master's degree in Economics and Data Analysis.

Academic year 2021/2022

- Lecturer (84 hours) in the undergraduate course *Analisi Statistica per le Decisioni d'Impresa*. University of Verona, Bachelor's degrees in Economics, Firms and International Markets (Vicenza) and Business Innovation and Economics (Vicenza).

- Lecturer (12 hours) in the graduate course *Machine Learning for Economics*. University of Verona, Master's degree in Economics and Data Analysis.

Academic year 2020/2021

- Lecturer (18 hours) in the undergraduate course *Econometrics of Financial Markets*. Free University of Bozen-Bolzano, Faculty of Economics and Management.

- Lecturer (36 hours) in the graduate course *Statistical Methods for Business Analysis*. Free University of Bozen-Bolzano, Faculty of Economics and Management.

- Lecturer (36 hours) in the graduate course *Applied Statistics for Accounting and Finance*. Free University of Bozen-Bolzano, Faculty of Economics and Management.

Academic year 2019/2020

- Lecturer (39 hours) in the undergraduate course *Econometrics of Financial Markets*. Free University of Bozen-Bolzano, Faculty of Economics and Management.

- Teaching assistant (18 hours) in the undergraduate course *Statistica*. Free University of Bozen-Bolzano, Faculty of Economics and Management.

- Teaching assistant (24 hours) in the undergraduate course *Statistica per SES*. University of Bozen, Faculty of Economics and Management.

- Teaching assistant (10 hours) in the graduate course *Applied Statistics*. University of Bozen, Faculty of Science and Technology.

- Teaching assistant (6 hours) in the graduate course *Statistics for the Public Sector, M-2 Economic Statistics*. University of Bozen, Faculty of Economics and Management.

Academic year 2017/2018

- Teaching assistant (26 hours) in the graduate course *Statistica Progredito*. University of Padova, Department of Statistical Sciences.

- Teaching assistant (21 hours) in the graduate course *Statistica Applicata*. University of Padova, Department of Biology.

Academic year 2016/2017

Teaching assistant (12 hours) in the graduate course *Statistica Progredito*. University of Padova, Department of Statistical Sciences.

Organization of scientific events

2020: Member of the scientific and organizing committee for the workshop *Learning Tools and Applied Quantitative Methods for Decision Making*. Free University of Bozen-Bolzano, Faculty of

Economics and Management, December 9–11, 2020.

2017: Member of the scientific and organizing committee for the *5th StaTalk Workshop*. University of Padova, Department of Statistical Sciences, November 17, 2017.

Peer review activity

Reviewer for the international scientific journals *Statistical Methods and Applications*, *Annals of Applied Statistics*, *International Journal of Forecasting*, *Journal of Statistical Planning and Inference*.

Professional memberships

Fellow of the Royal Statistical Society (RSS) and Junior member of the Italian Statistical Society (SIS).

Computer skills

- Programming languages: R, C (basic), Java (basic).
- Scripting languages: PHP (basic).
- Databases: SQL (basic).
- OS environments: Mac OS X, Linux, Windows.

Language skills

Italian: native; English: fluent; French: basic; Spanish: basic.