Daniele Girolimetto PhD

Info

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Current position

Assistant professor (RTT - tenure track) ∼ Oct 2025
Scientific-disciplinary sector: STAT-02/A – Economics/business statistics

Postdoctoral Research Fellow Nov 2023 – Oct 2025
- Scientific-disciplinary sector: STAT-02/A – Economics/business statistics
- Two-year research fellowship within the project "*Reconciliation techniques and machine learning for Realized Volatility forecasting*", Department of Statistical Sciences, University of Padova

Research interest

- Statistical and machine learning methods for the analysis of economic time series in finance, energy, and macroeconomics: estimation, identifiability, and forecasting of univariate and multivariate time series (e.g., reconciliation and combination of constrained time series)
- Development of algorithms, tools and software for statistical analysis

Education and Training

PhD in Statistical Sciences Oct 2020 – Dec 2023
Department of Statistical Sciences, University of Padova (Defense: 7 May 2024)
Thesis: "*Forecast reconciliation: Methodological issues and applications*"
Supervisors: Tommaso Di Fonzo (University of Padova), George Athanasopoulos (Monash University), and Rob J Hyndman (Monash University)

MSc in Statistical Sciences Oct 2018 – Sep 2020
Department of Statistical Sciences, University of Padova 110/110 cum laude
Thesis: "*Cross-sectional, temporal and cross-temporal forecast reconciliation for time series*"
Supervisor: Tommaso Di Fonzo

BSc in Statistics for Economics and Business Oct 2015 – Jul 2018
Department of Statistical Sciences, University of Padova 110/110 cum laude
Thesis: "*INAR processes with symmetric innovations' distribution*"
Supervisor: Luisa Bisaglia

Others – Workshops/Summer Schools/Seminars
- Attended the seminar "*Cross-Temporal Forecast Reconciliation at Digital Platforms with Machine Learning*" by Ines Wilms, organized in collaboration by Università di Tor Vergata, Università La Sapienza, and Università LUISS (Rome, IT – 21 Feb 2025)
- Attended the seminar series "*Distinguished Lecture Series: Forecast Reconciliation*" by Prof. Rob J. Hyndman (Monash Univ.), International Institute of Forecasters (Online – Nov 2023)
- Summer School *Replicability crisis in Science?*, organized by the Departments of Statistical Sciences and of Philosophy, Sociology, Education and Applied Psychology, University of Padova (Padova, IT – 18–22 Sep 2023)

- 7^{th} *Continuing Education in Macroeconometrics* workshop organized by Monash Business School (Melbourne, AU – Nov 7/8, 2022)

Skills

- Language skills: Italian (native), English (C1)
- Programming:
  - Statistical software: R – Python – Julia – SQL – SAS – C++
  - Other tools: LaTeX – GIT – Moodle – HTML – CSS – Markdown – Quarto

Awards and Honors

- Financial contribution awarded by the International Institute of Forecasters (IIF) to support participation in the Workshop on Open Source Forecasting (2025 – Beijing, China)
- Honorable mention for the "*Premio Miranda Cuffaro 2025*", awarded by the Italian Statistical Society (SIS) for the best PhD thesis in Economic Statistics
- "*2024 Best PhD Thesis Award in Forecasting*", awarded by the journal *Forecasting* for an outstanding doctoral thesis with innovative contributions in the field. Selected by an expert committee chaired by Prof. Dr. Sonia Leva (Editor-in-Chief)
- 3^{th} place in the "*PhD Tourism Demand Hackathon*" organized by the Tourism and Hospitality Section of the International Institute of Forecasters during the 44^{th} International Symposium on Forecasting (2024 – Dijon, FR)
- "*2023 Research Award*" from the Department of Statistical Sciences, University of Padova, for the article "*Cross-temporal probabilistic forecast reconciliation: Methodological and practical issues*" published in the *International Journal of Forecasting*
- Best Student Presentation Award (1° place) at the 43^{rd} International Symposium on Forecasting (Charlottesville, USA)
- *Travel award* from the 43^{rd} International Symposium on Forecasting for the presentation "Cross-temporal probabilistic reconciliation" (2023 – Charlottesville, USA)
- PhD scholarship in Statistics (University of Padova), open-topic grant funded by the Fondazione Cassa di Risparmio di Padova e Rovigo (36° cycle, 2020–2023)
- Selected participant in the *"Stat Data Camp"* (2020 edition) and *"Data Research Camp"* (2022 edition), organized by the University of Padova
- "*Mille e una lode*" merit scholarships (2016, 2017, and 2018 editions), awarded to the top students of each degree program at the University of Padova

Teaching and Academic Activity

Teaching Roles

- *Statistical Methods for Finance*, BSc degree in Statistics for Economics and Business, Department of Statistical Sciences, University of Padova. Main course Instructor — A.Y. 2024/25
- *Statistical Models for Economic Data*, MSc degree in Statistical Sciences, Department of Statistical Sciences, University of Padova — A.Y. 2023/24
- Teaching assistant: exercise sessions for the BSc course "Calculus" and the MSc course "Advanced Statistics", Department of Statistical Sciences, University of Padova — A.Y. 2019/20

Academic Service

- Member of the Joint Program Council for the Bachelor's Degrees in Statistics, Department of Statistical Sciences, University of Padova — A.Y. 2024/25

Thesis Supervision

Supervised and co-supervised several MSc (4) and BSc (3) theses in Statistics and Data Science at the University of Padova, covering topics such as neural networks for energy demand forecasting, cross-temporal forecast reconciliation, probabilistic forecasting for intermittent demand and forecsting financial time series.

Research Activity

Visiting Positions

- *PhD visit* — Sep 2022 – Feb 2023
  Department of Econometrics and Business Statistics, Monash University, Melbourne, Australia. Research focused on developing probabilistic forecasting techniques for multiple time series, under the supervision of Professors George Athanasopoulos and Rob J Hyndman.
- *Research visit*
  - Dalle Molle Institute for Artificial Intelligence, USI-SUPSI, Lugano (CH). Research group led by Prof. Giorgio Corani. — Feb–Mar 2024
  - University of Bath, Bath (UK). Research group led by Prof. Fotios Petropoulos. — Mar 2025

Refereeing for Scientific Journals

- *International Journal of Forecasting*
- *Journal of the Royal Statistical Society, Series A (Statistics in Society)*
- *Statistical Methods & Applications*
- *The R Journal*
- *Tourism Management*

Consulting Activity

- *Vittoria Assicurazioni*, as part of the Statistical Consulting course held at the Department of Statistical Sciences, University of Padova.

Alongside my academic research, I also carry out independent consulting activities, mainly in the area of time series forecasting.

Scientific Societies and Research Groups

Membership in Scientific Societies

- International Institute of Forecasting (IIF) since 2021
- Italian Statistical Society (SIS) since 2023
- Society for Nonlinear Dynamics and Econometrics (SNDE) since 2024
- Young Group of the Italian Statistical Society (y-SIS) since 2024
- IIF-Early Career Forecasters community (IIF-ERC) since 2024

Participation in Research Groups

- During my visit at Monash University (Sep 2022 – Feb 2023), I actively took part in the activities of the NUMBATs group (Non-Uniform Monash Business Analytics Team) and gave a seminar on cross-temporal forecast reconciliation.
- During my visit to the Dalle Molle Institute for Artificial Intelligence (Feb 2024 – Mar 2024), I joined the research group led by Prof. Giorgio Corani and presented a reading group talk on cross-temporal probabilistic reconciliation.

Research Projects

- PRIN Project "PRICE: A New Paradigm for High-Frequency Finance", Local PI: Prof. Massimiliano Caporin (University of Padova, 2023–2025)
- PRIN Project "HiDEA: Advanced Econometrics for High-frequency Data", Local PI: Prof. Massimiliano Caporin (University of Padova, 2017–2023)
- Departmental Project "Probabilistic forecast reconciliation", PI: Luisa Bisaglia (Department of Statistical Sciences, University of Padova, 2022–2023)

Software Development

- **FoReco**: Forecast Reconciliation — R CRAN | 2020 – 2025
  Methods for point and probabilistic reconciliation of forecasts (cross-sectional, temporal, and cross-temporal) of linearly constrained time series. GitHub:`danigiro/FoReco`
- **FoCo2**: Coherent Forecast Combination — R CRAN | 2024 – 2025
  Forecast combination and reconciliation approaches from multiple models or experts, ensuring coherence with known linear constraints. GitHub:`danigiro/FoCo2`
- **haR**: Heterogeneous AutoRegressive (HAR) model — R Package | 2023
  Estimation and forecasting of the Heterogeneous Autoregressive (HAR) model. GitHub:`danigiro/haR`
- **TimeGPTapi**: Interact with the TimeGPT API — R Package | 2023
  Interface to interact with the TimeGPT API developed by Nixtla, a neural network model trained for univariate and multivariate time series forecasting. GitHub:`danigiro/TimeGPTapi`
- Other contributions: **forecast** (R package for time series forecasting, CRAN).

More details available on my personal page `[GitHub]`.

Third Mission

- Support for the organization of the 31st Symposium Society for Nonlinear Dynamics and Econometrics at the Department of Statistical Sciences (University of Padova) — 21/22 Mar 2024
- Curator of the Italian version "Previsione: principi e pratica" of the book "Forecasting: Principles and Practice" by Rob J Hyndman and George Athanasopoulos
- Orientation day tutor "Scegli con noi" (Università degli Studi di Padova) for high school students (4th and 5th year) at the Agripolis Campus, Legnaro. — 20 Feb 2020
- Orientation tutor at Liceo Einstein (Piove di Sacco) for high school students on the degree courses of the Department of Statistical Sciences (University of Padova). — 29 Jan 2020

Conferences and Talks

Invited Talks

2025 45th International Symposium on Forecasting. *Coherent forecast combination: a stacked regression approach*. Beijing, CN – Jun 29/Jul 2

- IIF Workshop on Open Source Forecasting. *FoReco: From foundations to frontiers*. Beijing, CN – Jun 25/27
- IIF Workshop on Open Source Forecasting. *Hierarchical forecast reconciliation on networks: A network flow optimization formulation (discussant)*. Beijing, CN – Jun 25/27
- Seminar at the Department of Statistical Sciences, University of Bologna. *Understanding forecast reconciliation: Coherence in multivariate forecasting*. Bologna, IT – May 22

2024 18th International Conference on Computational and Financial Econometrics CFE – CMStatistics. *Coherent forecast combination for linearly constrained multiple time series*. London, UK – Dec 14/16

> 4th Young Applied Mathematicians Conference. *Forecast reconciliation: Not only hierarchies*. Rome, IT – Sep 16/20

> Relatore del workshop "*How to use forecast reconciliation: Cross-temporal probabilistic forecast reconciliation*" organizzato da Time series Analysis and Forecasting Society (TAFS). Online – Apr 16

2023 17th International Conference on Computational and Financial Econometrics. *Realized Volatility forecasting: Hierarchies and forecast reconciliation*. Berlin, DE – Dec 16/18

> IIF Workshop on Forecast Reconciliation. *Cross-temporal probabilistic forecast reconciliation*. Prato, IT – Sep 7/8

> Relatore del workshop "*Forecast Reconciliation for Hierarchically Organized Data*" organizzato da Forecasting For Social Good (F4SG), International Institute of Forecasters. Online – Mar 31

2022 NUMBAT Seminar. *Advancements in forecast reconciliation*. Melbourne, AU – Oct 14

Organized Sessions

2025 SIS2025: Statistics for Innovation. Sessione: *Innovative forecasting frameworks to support coherent decisions in time series analysis*. Genova, IT – Jun 16/18

2024 18th International Conference on Computational and Financial Econometrics. Sessione: *Forecasting: Theory and practice*. London, UK – Dec 14/16

Contributed Talks

2025 SIS2025: Statistics for Innovation. *Energy load forecasting using Terna public data: a free lunch multi-task combination approach*. Genova, IT – Jun 16/18

> Junior Milan Time Series Workshop. *Multi-task forecast combination: a stacked regression approach*. Milano, IT – Mar 31

> 3rd Italian Conference on Economic Statistics. *Forecasting Italian daily electricity generation disaggregated by geographical zones and energy sources using coherent forecast combination*. Napoli, IT – Feb 13/14

2024 useR! 2024 conference. *Forecast Reconciliation Made Easy: The FoReco Package*. Salzburg, AT – Jul 8/11

> 44th International Symposium on Forecasting. *Further developments in regression-based cross-temporal forecast reconciliation*. Dijon, FR – Jul 1/3

> 53rd Meeting of the Italian Statistical Society. *Insights into regression-based cross-temporal forecast reconciliation*. Bari, IT – Jun 17/20

> 31st Symposium Society for Nonlinear Dynamics and Econometrics. *Exploiting Intraday Decompositions in Realized Volatility Forecasting: A Forecast Reconciliation Approach*. Padova, IT – Mar 21/22

2023 9th International Conference on Time Series and Forecasting. *Probabilistic forecast reconciliation: cross-temporal framework*. Gran Canaria, ES – Jul 12/14

> 43rd International Symposium on Forecasting. *Cross-temporal probabilistic forecast reconciliation*. Charlottesville, USA – Jun 25/28

- Quantitative Finance and Financial Econometrics 2023. *Realized Volatility forecasting: Hierarchies and forecast reconciliation*. Marseille, FR – Jun 9/10

2022 42nd IIF International Symposium on Forecasting. *Point and probabilistic forecast reconciliation for general linearly constrained multiple time series*. Oxford, UK – Jul 10/12

- 8thInternational conference on Time Series and Forecasting. *Point and probabilistic forecast reconciliation for general linearly constrained multiple time series*. Gran Canaria, ES – Jun 27/30
- 51st Meeting of the Italian Statistical Society. *Fully reconciled probabilistic GDP forecasts from Income and Expenditure sides*. Caserta, IT – Jun 22/24

2021 2021 ASA Joint Statistical Meeting. *Using cross-temporal hierarchies to improve the forecasts from large datasets of high-frequency time series*. Online – Aug 8/12

- 41st IIF International Symposium on Forecasting. *Tools for forecast reconciliation: FoReco 0.2*. Online – Jun 27/30
- 50th Meeting of the Italian Statistical Society. *Non-negative cross-temporal forecast reconciliation*. Online – Jun 21/25

2020 2020 Meeting of the Italian Statistical Society. *Fully reconciled GDP forecasts from Income and Expenditure sides*

Publications

Journal Articles

[8] Abolghasemi, M., Girolimetto, D., & Di Fonzo, T. (2025). Improving Cross-temporal forecasts reconciliation accuracy and utility in energy market. *Applied Energy*, 394, 126053. DOI:10.1016/j.apenergy.2025.126053. arXiv:2412.11153.

[7] Caporin, M., Di Fonzo, T., & Girolimetto, D. (2024). Exploiting intraday decompositions in Realized Volatility forecasting: A forecast reconciliation approach. *Journal of Financial Econometrics*, 22(5), 1759–1784. DOI:10.1093/jjfinec/nbae014.

[6] Dalla Zuanna, G., Di Fonzo, T., Girolimetto, D., & Loghi, M. (2024). Exploring the impacts of COVID-19 on births in Italy, 2020-2022. *Population, Space and Place*, 30(8), 1–13. arXiv:2306.02952. DOI:10.1002/psp.2807.

[5] Girolimetto, D., Athanasopoulos, G., Di Fonzo, T., & Hyndman, R. J. (2024). Cross-temporal probabilistic forecast reconciliation: Methodological and practical issues. *International Journal of Forecasting*, 40(3), 1134–1151. arXiv:2303.17277. DOI:10.1016/j.ijforecast.2023.10.003.

[4] Girolimetto, D., & Di Fonzo, T. (2024). Point and probabilistic forecast reconciliation for general linearly constrained multiple time series. *Statistical Methods & Applications*, 33, 581–607. arXiv:2305.05330. DOI:10.1007/s10260-023-00738-6.

[3] Di Fonzo, T., & Girolimetto, D. (2024). Forecast combination-based forecast reconciliation: Insights and extensions. *International Journal of Forecasting*, 40(2), 490–514. arXiv:2106.05653. DOI:10.1016/j.ijforecast.2022.07.001.

[2] Di Fonzo, T., & Girolimetto, D. (2023). Cross-temporal forecast reconciliation: Optimal combination method and heuristic alternatives. *International Journal of Forecasting*, 39(1), 39–57. arXiv:2006.08570. DOI:10.1016/j.ijforecast.2021.08.004.

[1] Di Fonzo, T., & Girolimetto, D. (2023). Spatio-temporal reconciliation of solar forecasts. *Solar Energy*, 251, 13–29. arXiv:2209.07146. DOI:10.1016/j.solener.2023.01.003.

Conference Proceedings

[9] Girolimetto, D., & Di Fonzo, T. (2025a). Energy load forecasting using terna public data: A free lunch multi-task combination approach. In E. di Bella, V. Gioia, C. Lagazio, & S. Zaccarin (Eds.), Statistics for innovation III - Italian Statistical Society Series on Advances in Statistics (pp. 338–344). Springer. arXiv:2502.11873. DOI:10.1007/978-3-031-95995-0_56.

[8] Bisaglia, L., Ghamari, R., & Girolimetto, D. (2025). Linear vs. machine learning approaches for cross-temporal forecast reconciliation with an application to Italian energy load data. In E. di Bella, V. Gioia, C. Lagazio, & S. Zaccarin (Eds.), Statistics for innovation II - Italian Statistical Society Series on Advances in Statistics (pp. 184–189). Springer. DOI:10.1007/978-3-031-96303-2_30.

[7] Caporin, M., Girolimetto, D., & Lopetuso, E. (2025). Forecast reconciliation and multivariate GARCH. In R. Castellano, G. De Luca, & E. Bruno (Eds.), Sustainability, innovation and digitalization: Statistical measurement for economic analysis (3rd Italian Conference on Economic Statistics) (pp. 81–84). Enzo Albano Edizioni. ISBN:979-12-80655-52-3

[6] Girolimetto, D., & Di Fonzo, T. (2025). Forecasting Italian daily electricity generation disaggregated by geographical zones and energy sources using coherent forecast combination. In R. Castellano, G. De Luca, & E. Bruno (Eds.), Sustainability, innovation and digitalization: Statistical measurement for economic analysis (3rd Italian Conference on Economic Statistics) (pp. 169–172). Enzo Albano Edizioni. ISBN:979-12-80655-52-3. arXiv:2502.11878. DOI:10.48550/arXiv.2502.11878.

[5] Girolimetto, D., & Di Fonzo, T. (2025b). Insights into regression-based cross-temporal forecast reconciliation. In A. Pollice & P. Mariani (Eds.), Methodological and applied statistics and demography IV - Italian Statistical Society Series on Advances in Statistics (pp. 119–125). Springer. arXiv:2410.19407. DOI:10.1007/978-3-031-64447-4_20.

[4] Girolimetto, D. (2024). Forecast reconciliation: Not only hierarchies. In E. Onofri, & G. Auricchio, *The Fourth Edition of the Young Applied Mathematicians Conference: Book of abstract* (pp. 209–210). Cnr Edizioni. ISBN:978888080642. DOI:10.48227/YAMC-2024.

[3] Di Fonzo, T., & Girolimetto, D. (2022). Fully reconciled probabilistic GDP forecasts from Income and Expenditure sides. In A. Balzanella, M. Bini, C. Cavicchia, & R. Verde, *Book of Short Papers SIS 2022* (pp. 1376–1381). Pearson. ISBN:978-88-919-3231-0.

[2] Girolimetto, D., & Di Fonzo, T. (2022). Point and probabilistic forecast reconciliation for general linearly constrained multiple time series. In O. Valenzuela, F. Rojas, H. Pomares, L. J. Herrera, & I. Rojas, *ITISE 2022: Proceedings of abstract* (pp. 34–35). ISBN:978-84-19214-24-9.

[1] Bisaglia, L., Di Fonzo, T., & Girolimetto, D. (2020). Fully reconciled GDP forecasts from Income and Expenditure sides. In A. Pollice, N. Salvati, & F. Schirripa Spagnolo, *Book of Short Papers SIS 2020* (pp. 951–956). Pearson. ISBN:978-88-919-1077-6. arXiv:2004.03864.

Technical Documentation (Software)

[3] Girolimetto, D., & Di Fonzo, T. (2024). `FoReco`: Forecast Reconciliation. *R package v. 1.0*. CRAN:cran.r-project.org/package=FoReco. DOI:10.32614/CRAN.package.FoReco.

[2] Girolimetto, D., & Di Fonzo, T. (2024). `FoCo2`: Coherent Forecast Combination. *R package v. 0.1.1*. GitHub:danigiro/FoCo2. DOI:10.32614/CRAN.package.FoCo2.

[1] Girolimetto, D. (2023). `haR`: Heterogeneous AutoRegressive (HAR) model. *R package v. 0.1*. GitHub:danigiro/haR.

Theses

[2] Girolimetto, D. (2024) Forecast reconciliation: Methodological issues and applications. *PhD thesis*. GitHub:`danigiro/phd-thesis`.

[1] Girolimetto, D. (2020) Riconciliazione contemporanea, temporale e cross-temporale di previsioni di serie storiche. *Master degree thesis*.

Other Works / Under Review

[2] Girolimetto, D., & Di Fonzo, T. (2024). Coherent forecast combination for linearly constrained multiple time series. *Submitted*. DOI:`10.48550/arXiv.2412.03429`.

[1] Girolimetto, D., & Di Fonzo, T. (2024). Insights into regression-based cross-temporal forecast reconciliation. *Submitted*. arXiv:`2410.19407` DOI:`10.48550/arXiv.2410.19407`.

More details available on my personal page `[GScholar]`.

29 August 2025, *Daniele Girolimetto*