

# Giovanni Ballarin

Website: [giovanni-ballarin.netlify.app](http://giovanni-ballarin.netlify.app)

Email: [giovanni.ballarin@gess.uni-mannheim.de](mailto:giovanni.ballarin@gess.uni-mannheim.de)

Address: University of Mannheim – Department of Economics  
L7, 3-5, 1. OG, Zi 109 68131, Mannheim, Germany

## Education

Ph.D., Economics, University of Mannheim	since 2018
M.Sc., Economics, University of Konstanz	2017–2018
M.Sc., Economics, University of Tor Vergata	2016–2018
B.Sc., Mathematics, University of Milano–Bicocca	2013–2016

## Research Fields

Econometrics, Time Series Analysis, Machine and Statistical Learning, Macroeconometrics.

## Job Market Paper

### *Impulse Response Analysis of Nonlinear Time Series Models*

Linear time series models are the workhorse of structural macroeconomic analysis. Yet, economic theory as well as data suggest that nonlinear and asymmetric effects might be key to understanding the potential effects of sudden economic changes. This paper proposes a new semi-nonparametric sieve approach to estimate impulse response functions of nonlinear time series within a general class of structural models. Using physical dependence conditions, I prove that a two-step procedure can flexibly accommodate nonlinear specifications, avoiding the choice of fixed parametric forms. Sieve impulse responses are proven to be consistent by deriving uniform estimation guarantees, while an iterative algorithm makes it straightforward to compute them in practice. Simulations show that the proposed semi-nonparametric approach provides insurance against misspecification at minor efficiency costs. In a US monetary policy application, I find that the sieve GDP response associated with a rate hike is, at its peak effects, 16% larger than that of a linear model. Finally, when studying interest rate uncertainty shocks, sieve responses imply up to 54% and 71% stronger contractionary effects on production and inflation, respectively.

## Publications

*Reservoir Computing for Macroeconomic Forecasting with Mixed Frequency Data* (with Petros Dellaportas, Lyudmila Grigoryeva, Marcel Hirt, Sophie van Huellen and Juan-Pablo Ortega)  
*International Journal of Forecasting* (2023+)

*Ridge Regularized Estimation of VAR Models for Inference*  
*Journal of Time Series Analysis* (2024+)

## Research Papers

*Memory of Recurrent Networks: Do We Compute It Right?* (with Lyudmila Grigoryeva and Juan-Pablo Ortega)  
*Submitted – Journal of Machine Learning Research*

## References

Prof. Carsten Trenkler University of Mannheim L7, 3-5 68131, Mannheim <a href="mailto:trenkler@uni-mannheim.de">trenkler@uni-mannheim.de</a>	Prof. Lyudmila Grigoryeva University of St. Gallen Bodanstrasse 6 CH-9000, St. Gallen <a href="mailto:lyudmila.grigoryeva@unisg.ch">lyudmila.grigoryeva@unisg.ch</a>	Prof. Petros Dellaportas UCL Gower Street WC1E 6BT, London <a href="mailto:p.dellaportas@ucl.ac.uk">p.dellaportas@ucl.ac.uk</a>	Prof. Juan-Pablo Ortega NTU Singapore 21 Nanyang Link Singapore 637371 <a href="mailto:juan-pablo.ortega@ntu.edu.sg">juan-pablo.ortega@ntu.edu.sg</a>
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## Conferences and Workshops

- 2023 DEDS 2023 · University of Mannheim · ENTER Jamboree · 43rd International Symposium on Forecasting · HKMetrics Workshop · Tilburg University · Vrije Universiteit Amsterdam · Universidad Carlos III de Madrid · FinEML Conference 2023
- 2022 Young Researchers Workshop “Big and Smart Data Analysis in Finance” · 5th Vienna Workshop on High-Dimensional Times Series in Macroeconomics and Finance · 2nd International Econometrics PhD Conference
- 2021 HKMetrics Workshop · University of Mannheim · ENTER Jamboree
- 2020 University of Mannheim
- 2018 JuliaCon

## Teaching Experience

### University of Mannheim

Advanced Econometrics I (PhD Level) Teaching Assistant to Prof. Christoph Rothe	2021–2023
Advanced Macroeconomics III (PhD Level) Teaching Assistant to Assistant Prof. Matthias Meier	2021
Mathematics for Economists (PhD Level) Teaching Assistant	2019–2020

## Professional Experience

Research Assistant, ZEW Mannheim, Prof. Sebastian Siegloch	2020
Student Assistant, University of Konstanz, Jr. Prof. Lyudmila Grigoryeva	2018

## Honors, Scholarships, and Fellowships

CDSE Teaching Award, University of Mannheim	2020
Preis des Vereins der Ehemaligen der Universität Konstanz (VEUK e.V.)	2018
Merit Prize for First Year M.Sc. Students, University of Tor Vergata	2017

## Referee Work

*International Journal of Forecasting · Neural Networks · Journal of Econometrics*

## Personal Information

Nationality: Italy

Language Skills: Italian (native), English (proficient), German (basic)

*Updated:* February 25, 2024