Dr. Markus Fritsch
Assistant Professor
University of Passau

Academic CV

1 Contact Information

markus.fritsch@uni-passau.de
+49 851 - 509 256 5
https://github.com/markusfritsch
+49 851 - 509 256 2

2 Education

- *10/2014 - 07/2019*: Ph.D. in Economics
  University of Passau, Final Grade: 1.0 (Summa cum laude)
  Topic: Five essays on linear dynamic panel data models
  Supervisors: Prof. Harry Haupt, Prof. Oliver Entrop
- *10/2012 - 09/2014*: M.A. International Economics and Business
  University of Passau, Final Grade: 1.2
  Majors: International Business Finance, Statistical and Methodological Foundations
- *04/2011 - 09/2014*: M.Sc. Business Administration
  University of Passau, Final Grade: 1.2
  Major: Accounting Finance and Taxation
- *10/2007 - 03/2011*: B.Sc. Business Administration & Economics
  University of Passau and San Diego State University, Final Grade: 1.6
  Major: Accounting, Finance and Taxation

3 Academic Positions

- *09/2019 - present*: Assistant Professor
  Chair of Statistics and Data Analytics (Prof. Harry Haupt), University of Passau
- *10/2014 - 09/2019*: Teaching Assistant and Doctoral Researcher
  Chair of Statistics and Data Analytics (Prof. Harry Haupt), University of Passau
- *10/2012 - 07/2014*: Student Assistant
  Chair of Statistics (Prof. Harry Haupt), University of Passau

4 Research Interests

- Semi- and nonparametric modeling
- Quantile regression
- Panel data models
- Applied statistics and econometrics
- Data science and statistical learning

5 Publications

- Fritsch, M., H. Haupt, and J. Schnurbus (2025): Efficiency of poll-based multi-period forecasting systems for German state elections. *International Journal of Forecasting*, 41 (2), 670–688
- Fritsch, M., A. A. Y. Pua, and J. Schnurbus (2024): Teaching Advanced Topics in Econometrics using Introductory Textbooks: The Case of Dynamic Panel Data Methods. *International Review of Economics Education*, 47, 100297
- Ranpal, S., S. von Bargen, S. Gilles, D. Luschkova, M. Landgraf, P. Bogawski, C. Traidl-Hoffmann, C. Büttner, A. Damialis, M. Fritsch, and S. Jochner-Oette (2024): Continental-scale Evaluation of Downy Birch Pollen Production: Estimating the Impacts of Global Change. *Environmental Research*, 252, 119114
- Kleinke K., M. Fritsch, M. Stemmler, and F. Lösel (2024): Multiple imputation of longitudinal data – A comparison of robust imputation methods regarding sample size requirements, with an application to corporal punishment data. In: Dependent Data in Social Sciences Research, 2nd edition, Springer, 565–588
- Jetschni, J., M. Fritsch, and S. Jochner-Oette (2023): How does pollen production of allergenic species differ between urban and rural environments? *International Journal of Biometeorology*, 67 (11), 1839—1852
- Haupt, H. and M. Fritsch (2022): Quantile Trend Regression and its Application to Central England Temperature. *Mathematics*, 10 (3), 413
- Fritsch, M., A. A. Y. Pua, and J. Schnurbus (2021): pdynmc: A Package for Estimating Linear Dynamic Panel Data Models Based on Nonlinear Moment Conditions. *The R Journal*, 13 (1), 218–231
- Fritsch, M. and S. Behm (2021): Agglomeration and infrastructure effects in land use regression models for air pollution – Specification, estimation, and interpretations. *Atmospheric Environment*, 253, 118337
- Fritsch, M. and S. Behm (2021): Data for modeling nitrogen dioxide concentration levels across Germany. *Data in Brief*, 38, 107324
- Kleinke, K., M. Fritsch, M. Stemmler, J. Reinecke, and F. Lösel (2021): Quantile Regression-Based Multiple Imputation of Missing Values – An Evaluation and Application to Corporal Punishment Data. *Methodology*, 17 (3), 205–230
- Fritsch, M., H. Haupt, M. Stemmler, and F. Lösel (2019): Regression trees and random forests as alternatives to classical regression modeling: Investigating the risk factors for corporal punishment. *Psychological Test and Assessment Modeling*, 61 (4), 389–417
- Fritsch, M. (2019): Five essays on linear dynamic panel data models. *Dissertation*
- Fritsch, M., H. Haupt, and P. T. Ng (2016): Urban house price surfaces near a World Heritage Site: modeling conditional price and spatial heterogeneity. *Regional Science and Urban Economics*, 60, 260–275

6 Software and data

- pdynmc: Moment Condition Based Estimation of Linear Dynamic Panel Data Models.
  R package available `from:https://cran.r-project.org/web/packages/pdynmc/`
  for the latest development version, see: `https://github.com/markusfritsch/pdynmc`
- fixedEventFC: Functions and data for investigating the efficiency of poll-based multi-period forecasting systems for German state elections.
  Available from: `https://github.com/markusfritsch/fixedEventFC`

- prcpFC: Functions and data for monthly precipitation and precipitation anomaly forecasting at GHCNd monitoring station locations.
  Available from: `https://github.com/markusfritsch/prcpFC`
- quantWarming: Data and functions trend analysis of temperature time series.
  Available from: `https://github.com/markusfritsch/quantWarming`
- smoothLUR: Functions and data for smooth land use regression modeling.
  Available from: `https://github.com/markusfritsch/smoothLUR`

7 Working papers and work in progress

- Fritsch, M., Pua, A.A.Y., and J. Schnurbus: Properties of an estimator for linear dynamic panel data models based on nonlinear moment conditions. Working paper
- Fritsch, M., A. A. Y. Pua, and J. Schnurbus: Seven examples for teaching the method of moments to undergraduates. Working paper
- Fritsch, M., H. Haupt, T. Flock, J. Schnurbus, and P. Sibbertsen: The memory puzzle in precipitation: Uncertainty in memory parameter estimation and implications for forecasting practice. Working paper
- Haupt, H., and M. Fritsch: Collinear and singular dispersion matrices in seemingly unrelated regressions and fixed-effect panel data models. Working paper

- Fritsch, M.: On GMM estimation of linear dynamic panel data models. Work in progress
- Fritsch, M. and H. Haupt: Identifying trends and breaks in climatologic time series under unknown heterogeneity and dependence. Work in progress
- Fritsch, M., H. Haupt, D. Henderson, and J. Schnurbus: Prediction-oriented modeling of migration flows and an application to migration into Europe. Work in progress
- Peham, F., M. Fritsch, and J. Lorenz: The impact of different treatment protocols on the implant success rate and the bone level near tooth implants. Work in progress
- Pua, A. A. Y., M. Fritsch, and J. Schnurbus: Practical aspects of using quadratic moment conditions in linear dynamic panel data models. Work in progress

8 Conferences and Presentations

- *06/2024*: International Association of Applied Econometrics (IAAE) 2024 Annual Conference.
  Efficiency of poll-based multi-period forecasting systems for German state elections
- *06/2023*: International Association of Applied Econometrics (IAAE) 2023 Annual Conference.
  On the properties of an estimator for dynamic linear panel data models based on nonlinear moment conditions
- *05/2023*: The International Society for Ecological Modelling Global Conference 2023, Toronto.
  Peaks over quantiles: A method for analyzing trends in time series under unknown heterogeneity and dependence structure
- *02/2022*: Toronto Workshop on Reproducibility, virtual.
  Towards reproducible GMM estimation
- *12/2021*: CFE – CMStatistics, virtual.
  Fixed event forecasting at multiple lead times
- *11/2021*: AKA Workshop, Irsee.
  Data-driven characterization of the conditional response distribution by boosting quantile smoothing splines: Risk factors for corporal punishment of children by their parents

- *12/2020*: CFE – CMStatistics, virtual.
  Large sample properties of an IV estimator based on the Ahn and Schmidt moment conditions
- *12/2019*: CFE – CMStatistics, London.
  Practical aspects of using nonlinear moment conditions in linear dynamic panel data models
- *09/2019*: Statistical Week (Annual meeting German Statistical Society, DStatG), Trier.
  Practical aspects of using nonlinear moment conditions in linear dynamic panel data models
- *05/2019*: Invited talk (together with J. Schnurbus), Graz.
  Nonlinear spatial quantile regression-based modeling of hedonic housing prices
- *12/2018*: CFE – CMStatistics, Pisa.
  Nonlinear quantile regression-based modeling of hedonic housing prices
- *11/2018*: Urban Transitions, Sitges/Barcelona.
  Population, road traffic, land use, and the spatial distribution of background air pollution
- *09/2018*: Statistical Week (Annual meeting German Statistical Society, DStatG), Linz.
  A gentle introduction to GMM estimation of linear dynamic panel data models
- *12/2017*: CFE – CMStatistics, London.
  Nonlinear spatial hedonic quantile regression: Housing prices, relevant characteristics, and their shadow prices
- *09/2017*: Statistical Week (Annual meeting German Statistical Society, DStatG), Rostock.
  Large-n, large-T properties of an IV estimator based on nonlinear moment conditions
- *12/2016*: CFE - CMStatistics, Seville.
  Estimating linear dynamic panel data models using nonlinear moment conditions
- *09/2015*: Young academics workshop of the German Statistical Society (DStatG), Hamburg.
  Boosting-based quantile and expectile regression for German housing data

9 Courses attended

- *07/2018*: ASSEE Nonparametric Methods for Practitioners: Theory and Applications by Jeffrey S. Racine (McMaster University)
- *09/2017*: Modern Topics in Time Series Analysis by Dietmar Bauer, Manfred Deistler, Philip Hans Franses, Carsten Jentsch, Roland Langrock, Marco Lippi, Philipp Sibbertsen, Rolf Tschernig, Martin Wagner (organized by Bielefeld University and TU Dortmund)
- *06/2017*: NIPE Summer School on Quantile Regression by Roger Koenker (University of Illinois)
- *10/2016*: EBE Guest Course Adv. Panel Data Methods by Florian Heiß (University Düsseldorf)
- *08/2016*: Cemfi Summer School Structural Econometrics by Ariel Pakes (Harvard University)
- *08/2016*: ASSEE Nonlinear Cross Section & Panel Regression Models by A. Colin Cameron (UC Davis)
- *04/2016*: Topics in Econometrics: Identification by Andrew A. Y. Pua (University of Passau)
- *07/2015*: BGPE course Advanced Econometrics by Arthur van Soest (Tilburg University)
- *06/2015*: Topics in Panel Data Econometrics by Andrew A. Y. Pua (University of Amsterdam)
- *03/2015*: Time Series Econometrics by Roland Weigand (IAB, Nuremberg)

10 Teaching

- Mathematics, Lecture (Undergraduate)
- Statistics I, Lecture & Tutorial (Undergraduate)

- Statistics II, Lecture & Tutorial (Undergraduate)
- Introductory Econometrics, Tutorial (Undergraduate)
- Introductory Time Series Analysis, Lecture (Undergraduate)
- Fundamentals of Business Analytics (Graduate)
- Methods in Econometrics, Lecture & Tutorial (Graduate)
- Methods in Econometrics I, Lecture & Tutorial (Graduate)
- Methods in Econometrics II, Lecture & Tutorial (Graduate)
- Panel Data Analysis, Lecture & Tutorial (Graduate)
- Computational Statistics - Introduction to `R` (Graduate)
- Computational Statistics - Regression in `R` (Graduate)
- Computational Statistics - Statistical Learning in `R` (Graduate)
- Advanced Data Analytics, Lecture & Tutorial (Graduate)
- Topics in Applied Econometrics (Graduate)
- Seminar in Applied Statistics (Graduate)
- Advanced Econometrics (PhD)

11 Academic engagement

- Member of three appointment committees (as representative of the academic mid-level faculty)
- *2017 - 2021*: Conference session organizer at the CFE – CMStatistics
- Refereeing for Statistical Methods in Medical Research, Statistical Papers, Environmental Pollution, Econometrics, Mathematics, Stats, Methodology, International Journal of Climatology, International Review of Economics Education, Applied Sciences, Applied System Innovation, Sustainability, European Conference on Information Systems (ECIS)

12 Grants, awards, and third-party-funded projects

- European Union – European Regional Development Fund (EFRE) project DIGIONAL (Digitale Innovationen für den niederbayerischen Einzelhandel); joint project of Center for Market Research, Chair of Marketing and Innovation, Chair of Marketing and Services, Chair of Statistics, University of Passau (EUR 2,000,000); role: project staff
- Passau International Center for Advanced Interdisciplinary Studies (PICAIS) funding for research visit of guest professor (EUR 16,000); role: co-applicant
- Open-Access Publication Grants by library of the University of Passau (CHF 1,600; EUR 700); role: applicant
- Traveling Grant of the German Statistical Society (DStatG) for CFE – CMStatistics 2016, Seville (EUR 500); role: applicant
- Hans-Lindner-Award 2014 (Best Student Award) in International Economics and Business
- Hans-Lindner-Award 2014 (Best Student Award) in Business Administration

13 Memberships

Econometric Society
German Statistical Society (DStatG)
International Association for Applied Econometrics (IAAE)
International Society for Ecological Modelling (ISEM)

14 Work Experience

- *01/2017 - 12/2020*:
  Statistical consulting (part-time); completed projects include development of core component of software for budgeting predictive maintenance tasks for petrochemical companies and data analytics training for manufacturer
- *01/2012 - 04/2012*:
  JOIN internship, Controlling Global Mail, Deutsche Post AG (Bonn)
- *08/2011 - 01/2012*:
  Internship, Managerial target setting of products & product portfolio management, BMW AG (Munich)
- *03/2011 - 04/2011, 08/2010 - 09/2010, 03/2009 - 04/2009*:
  Internship and student trainee, Tax Advisory, Noerr LLP (Munich)
- *02/2010 - 04/2010*:
  Internship, M&A Advisory, DZ Bank AG (Frankfurt am Main)
- *08/2008 - 10/2008*:
  Internship, Operations, Linde Gas Therapeutics GmbH (Unterschleißheim)

15 Other Activities

- Skiing, hiking, sports in general

Passau, April 22, 2025