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Research interests

Time series econometrics in finance and macroeconomics, forecast evaluation, portfolio analysis

Education

- 2015–2020 **Ph.D. candidate in Economics**, Heidelberg University
Expected date of graduation: May 2020
Visiting scholar at Duke University, hosting professor: Andrew Patton, fall 2019
Visiting student at the Center for Doctoral Studies in Economics, University of Mannheim, 2015 - 2016
- 2012–2015 **M.Sc. in Economics**, Heidelberg University
- 2011–2014 **M.Sc. in Mathematics**, Heidelberg University
Exchange semester at Universidad Complutense, Madrid
- 2008–2011 **B.Sc. in Mathematics**, Heidelberg University

Job market paper

Measurement error sensitivity of loss functions for distribution forecasts (2019)

Economic variables are often reported on different scales or with measurement error, e.g. in macro-economic and financial applications. We examine the sensitivity of scoring rules for distribution forecasts in two dimensions: linear rescaling of the data and the influence of noise on the forecast evaluation outcome. First, we show that all commonly used scoring rules for distribution forecasts are robust to rescaling the data. Second, it is revealed that the forecast ranking based on the continuous ranked probability score is less sensitive to measurement error than the log score. Our theoretical results are complemented by a simulation study based on forecasting quarterly GDP growth and an empirical application forecasting realized variances of 28 DJIA constituents. In line with its proven gross-error-insensitivity, the ranking of the continuous ranked probability score is the most consistent between evaluations based on the true outcome and the observations with measurement error.

Most recent version available at SSRN: <https://ssrn.com/abstract=3476461>.

Publications

Two are better than one: volatility forecasting using multiplicative component GARCH-MIDAS models (2019)

Joint with Christian Conrad, *Journal of Applied Econometrics* (forthcoming)

We examine the properties and forecast performance of multiplicative volatility specifications that belong to the class of GARCH-MIDAS models suggested in Engle et al. (2013). In those models volatility is decomposed into a short-term GARCH component and a long-term component that is

driven by an explanatory variable. We derive the kurtosis of returns, the autocorrelation function of squared returns, and the R^2 of a Mincer-Zarnowitz regression and evaluate these models in a Monte-Carlo simulation. For S&P 500 data, we compare the forecast performance of GARCH-MIDAS models with a wide range of competitor models such as HAR, Realized GARCH, HEAVY and Markov-Switching GARCH. Our results show that the GARCH-MIDAS based on housing starts as an explanatory variable significantly outperforms all competitor models at forecast horizons of two and three months ahead.

Available at <https://doi.org/10.1002/jae.2742>.

Working papers

Volatility forecasting for low-volatility investing

Joint with Christian Conrad and Fabian Krüger, *work in progress*

Low-volatility factor investing requires an investor to identify the next period's low-volatility stocks. Existing approaches assume that each stock's volatility follows a random walk based on daily return data. This assumption does not concur with current econometric literature that documents the benefits of employing intraday data for predicting future volatility. Therefore, we ask whether recent econometric volatility models are useful for low-volatility investing. By constructing model-based forecasts for all S&P 500 stocks, we find that econometric models are superior to the random walk in identifying low-volatility stocks, also lead to more stable portfolios with less rebalancing, and to higher returns after transaction costs.

Presentations

- 2019 **Financial Econometrics Lunch Group at Duke University**, Durham, USA (scheduled)
CAIR Sponsored Konstanz-Lancaster-Manchester-Warwick Joint PhD Workshop on Quantitative Finance and Econometrics, Manchester, UK (invited)
- 2018 **12th International Conference on Computational and Financial Econometrics**, Pisa, Italy
4th Konstanz-Lancaster Workshop on Finance and Econometrics, Konstanz, Germany (invited)
Frontiers of Factor Investing, Lancaster, UK
IV International PhD Conference in Economics, Leicester, UK (poster)
- 2017 **ScienceFore Summer School**, Heidelberg, Germany (poster)
Annual Conference of the International Association for Applied Econometrics, Sapporo, Japan
Rhenish Multivariate Time Series Econometrics, Rotterdam, The Netherlands
- 2016 **European Meeting of the Econometric Society**, Geneva, Switzerland (poster)

Regular presenter and active participant in the weekly Macro and Econometrics Seminar at the Department of Economics, Heidelberg University, and the biannual HKMetrics PhD workshops. Conrad and Kleen (2019) has also been presented by my co-author at the 11th Annual SoFiE Conference 2018 in Lugano, the Quantitative Finance and Financial Econometrics Conference 2018 in Marseille, and in research seminars at the University of Kiel and the University of Gießen.

Summer schools

- 2018 **Big Data in Finance and Economics**, *SoFiE Financial Econometrics Summer School*, Brussels, Belgium
Lecturers: Giorgio Primiceri and Domenico Giannone
- 2017 **The Econometrics of Derivatives Markets**, *SoFiE Financial Econometrics Summer School*, Chicago, USA
Lecturers: Torben Andersen and Viktor Todorov

Teaching

Tutorials for bachelor students

- Mathematics for Economists (winter 2013/14–2019/20)
Plenary TA sessions and supervision of up to nine student teaching assistants
- Macroeconometrics (summer 2016)

Tutorials for master students

- Advanced Econometrics (winter 2019/20)

Seminars for bachelor and master students

- Primary supervisor of bachelor and master students (summer 2016–2019)
- Topics included: analysis of financial time series, empirical finance, and replication of empirical results from research papers published in international journals

Coordinator of the internship program for future teachers

- Initiative funded by the Dieter-von-Holtzbrinck-foundation (since winter 2016/17)

Refereeing and academic service

Computational Economics, Journal of Forecasting, Applied Economics Letters, PLOS ONE
Organizer of the doctoral seminar at the Alfred-Weber-Institute (2016–2019)

Scholarships and awards

- 2018 Excellence in Teaching Award of the student association at the Department of Economics, Heidelberg University
- 2017 First prize for the whitepaper “Lykke Crypto Index 20” at Lykke marketplace by proposing the cryptocurrency index LCI20, <https://github.com/onnokleen/crypto-index>, with Christopher Zuber
- 2012–2014 Germany Scholarship
- 2011–2012 Dr. Frerichs Scholarship

Econometric software

- 2019 **highfrequency**, *R-package*, Project on improving the R-package *highfrequency*. Supported by Google Summer of Code
Mentors: Kris Boudt (Ghent University, Vrije Universiteit Brussel, and Vrije Universiteit Amsterdam), Dirk Eddelbuettel (University of Illinois) and Scott Payseur
- 2018 **mfGARCH**, *R-package*, Mixed-Frequency GARCH Models
Available on CRAN: <https://cran.r-project.org/package=mfGARCH>
Creator and maintainer

2017 **alfred**, *R-package*, Downloading Time Series from ALFRED Database for Various Vintages

Available on CRAN: <https://cran.r-project.org/package=alfred>

Creator and maintainer

Skills

Data analysis

- R, EViews, Matlab, C++
- Version-control system Git/Github, Ubuntu server management, basic knowledge in SQL and REST

Languages

- German, English
- Basic knowledge in Spanish, Dutch

References

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